National Library of Canada
Bibliothèque nationale du Canada

Canadian Theses Service
Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, tests publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30.

NL-339 (r. 88/04)

Canada

THE UNIVERSITY OF ALBERTA

Beautician Training Programs in Alberta: A Look at Success Rates with Particular Emphasis on Marvel Students

by

Glen Wilcox

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

IN

COUNSELLING PSYCHOLOGY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL 1988

Permission has been granted to the National Library of Canada to microfilm this thesis and to lend or sell copies of the film.

The author (copyright owner) has reserved other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without his/her written permission.

L'autorisation a été accordée à la Bibliothèque nationale du Canada de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur (titulaire du droit d'auteur) se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation écrite.

ISBN 0-315-45804-6

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: Glen Wilcox

TITLE OF THESIS: Beautician Training Programs in Alberta: A Look at Success Rates with Particular Emphasis on Marvel Students

DEGREE: Master of Education

YEAR THIS DEGREE GRANTED: 1988

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

(Signed)

Permanent Address:

Date: Sept. 15/88

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Beautician Training Programs in Alberta: A Look at Success Rates with Particular Emphasis on Marvel Students submitted by Glen Wilcox in partial fulfillment of the requirements for the degree of Master of Education.

Supervisor

Date: August 24, 1988

Abstract

This descriptive, retrospective study analyzes data collected from a sample of 778 beautician students who enrolled at Marvel, a private vocational school in Edmonton. All students either completed or terminated their training in the years 1984 through 1987. All were enrolled in the 1400 hour beautician training program which can be substituted for a 1400 hour period of apprenticeship and two ten-week technical training periods in Alberta. Apprenticeship Branch records were used to follow-up each student to see if they had: (a) apprenticed, (b) written certification exams, and (c) been certified as journeyman beauticians.

The study found a probability of 0.81 that a Marvel graduate would become a registered apprentice, and a probability of 0.80 that a Marvel graduate would become a certified beautician. Apprenticeship exam pass rates for Marvel students have exceeded the Provincial average in all four years studied. The type of financing used by a student was found to have a significant relationship with a number of success variables. Multiple step-wise linear regressions were used to identify student attribute predictors for Marvel theory and practical marks. For Marvel theory marks, three independent variables: student age, high school average, and being financed by oneself and/or relatives were significant, producing a multiple R of 0.433, the highest multiple R value found.

A number of recommendations result from the study including a Provincial definition of grade 10 for entrants (supported by student transcripts), a standardized entrance exam, and further research in the areas of private vocational schools and apprenticeship.

Acknowledgements

The time and advice given by thesis supervisor Dr. George Fitzsimmons is very much appreciated. The author also appreciates the assistance of:

- committee members Dr. Bill Hague and Dr. Clarence Preitz, of the University of Alberta
- Henrietta Komarnisky, Norm Gibault, and Frank Cairo, all from Marvel
- Wayne Nixon, Rick Wosnack, Bob Payette, and Peter Friedrick from the Alberta Apprenticeship and Trade Certification Branch.

TABLE OF CONTENTS

		Page
Abstract		iv
Acknowledgements		vi
Table of Contents		vii
List of Tables		ix
CHAPTER 1:	INTRODUCTION	1
	Background to the Problem	1
	Statement of the Problem	3
	Selected Definitions	6
CHAPTER 2:	RELATED LITERATURE	9
	Introduction	9
	Apprenticeship Literature	9
	Apprenticeship in Canada	9
	Apprenticeship in Alberta	15
	Private Vocational Schools Literature	22
	Beautician Training Program Literature	25
CHAPTER 3:	METHODS AND PROCEDURES	32
	Introduction	32
	Agreement from Marvel and Apprenticeship Board	32
	Collection of Data	34
	Analysis of Data	37
CHAPTER 4:	DATA ANALYSIS AND RESULTS	39
	Introduction	39
	Descriptive Statistics	39
	Student Population Attributes	39

Page

Success Rates at Marvel 47

Success Rates at Becoming Certified Beauticians 51

Success Rates of all Alberta Beautician Candidates 61

Correlations and Relationships between Student Attributes and Outcomes 65

Success at Marvel 65

Success at Obtaining Journeyman Beautician Certification 79

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS 109

Introduction 109

Conclusions with Regard to Questions Posed . . .109

Other Conclusions from the Data 125

Recommendations 127

Suggestions for Further Research 129

BIBLIOGRAPHY 132

TABLES

		Page
Table 4.1	Number of Students by Year of Completion . .	40
Table 4.2	Highest Grade Completed as Indicated by Marvel Graduates	41
Table 4.3	Age (to nearest year) of Marvel Entrants . .	42
Table 4.4	Type of Financing used by Marvel Students . .	45
Table 4.5	Number of Different Sources of Financing used by Marvel Students	46
Table 4.6	Types of Dual Sources of Financing used by Marvel Students	47
Table 4.7	Crosstabulation of Marvel Passes, Failures and Withdrawals	48
Table 4.8	Crosstabulation of Average Marks (Ranges) by Year of Completion for Those who Passed both Theory and Practial	50
Table 4.9	Crosstabulation of Marvel Graduates: Year of completion by Apprenticeship Code	52
Table 4.10	Crosstabulation of Marvel Graduates: Year of Completion by Proficiency Exam All People with Code "0" (Did not Apprentice)	53
Table 4.11	Crosstabulation of Marvel Graduates still Apprenticing: Year of Completion by Period of Apprenticeship	54

Table 4.12 Cumulative Success of Marvel Graduates: Apprenticeship and Certification 56

Table 4.13 Crosstabulation of Marvel Withdrawals/Failures Year by Apprenticeship Code 57

Table 4.14 Crosstabulation of Marvel Withdrawal Failures: Year by Proficiency Exam All People are "0" (Did Not Apprentice) 58

Table 4.15 Crosstabulation of Marvel Withdrawals/Failures Still Apprenticing: Year by Period of Apprenticeship 59

Table 4.16 Cumulative Success of Marvel Withdrawals/ Failures: Apprenticeship and Certification . 60

Table 4.17 Beautician Apprentice Statistics (Alberta) . 63

Table 4.18 Beautician Apprentice Branch Exams and Certificates Issued 64

Table 4.19 Marvel Grads: Apprenticeship Branch Exams and Certificates Issued 65

Table 4.20 Pearson Correlation Coefficients: Age, Marvel Theory & Practical Marks with High School Marks 66

Table 4.21 Crosstabulation of Methods of Financing by Marvel Theory Marks 68

Table 4.22 Crosstabulation of Method(s) of Financing by Marvel Practical Marks 70

Table 4.23 Crosstabulation of Method(s) of Financing by Whether or Not a Student Completed the Marvel Program 73

Table 4.24 Crosstabulation of Student Sex by Marvel Program Completion 75

Table 4.25 Crosstabulation of Student Sex by Marvel Theory Marks 76

Table 4.26 Crosstabulation of Student Sex and Marvel Practical Marks 77

Table 4.27 Pearson Correlation Coefficients for Student Attributes and Program Termination . 78

Table 4.28 Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (All Students 1984-1987) 80

Table 4.29 Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1984) 82

Table 4.30 Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1985) 84

Table 4.31 Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1986 Students) 86

Table 4.32 Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1987 Students) 88

Table 4.33 Crosstabulation of Method(s) of Financing and Apprenticeship Code Methods of Financing . . 91

Table 4.34 Crosstabulation of Method(s) of Financing and Apprenticeship Period 92

Table 4.35 Crosstabulation of Method(s) of Financing and Apprenticeship Branch Exams 94

Table 4.36 Crosstabulation of Student Sex and Apprenticeship Code 95

Table 4.37 Crosstabulation of Student Sex and Apprenticeship Period 96

Table 4.38 Crosstabulation of Student Sex and Apprenticeship Branch Exams 97

Table 4.39 Multiple Regression as a Correlation Matrix for Dependent Variables: Marvel Theory and Practical Marks 99

Table 4.40 Results of Multiple Stepwise Regression for Dependent Variable: Marvel Theory Marks . . . 101

Table 4.41 Results of Multiple Stepwise Regression for Dependent Variable: Marvel Theory Marks . . 102

Table 4.42 Multiple Regression as a Correlation Matrix for Dependent Variables: Marvel Theory and Practical Marks 105

Table 4.43 Results of Multiple Stepwise Regression for Dependent Variable: Marvel Theory Marks . . . 108

Table 4.44 Results of Multiple Stepwise Regression for Dependent Variable: Marvel Theory Marks . . . 108

Chapter 1

INTRODUCTION

A. Background to the Problem

The requirements for training and becoming certified as a beautician in Alberta have changed a number of times over the years. The most recent change, phased in throughout 1984, requires all beautician candidates to have a minimum of 1400 hours of practical experience (apprenticeship) in addition to their technical training (Alberta Regulation 422/83). This is a major change from previous requirements, which specified either a 1400 hour technical training program, or some minimum amount of practical experience in the trade. In fact, although the occupation of beautician had previously been classified as a trade in Alberta and examination and certification of journeyman candidates was being handled by the Alberta Apprenticeship Branch, no technical training was offered through the Apprenticeship Branch.

Prior to 1984, all journeyman beautician candidates, whether qualified by practical experience in the trade or by completing a 1400 training program, took common proficiency examinations (theory and practical) which was administered through the Apprenticeship Branch. A candidate could qualify to write the proficiency exams by completing an approved 1400 hour program, by having 3600 hours of acceptable work experience, or by some acceptable combination of these two (Alberta Regulation 113/73). The 1400 hour program has traditionally been offered by private

vocational schools in Alberta, although some high schools began offering similar training (beauty culture) in the 1960's.

The new regulations provide for two basic patterns or routes, both leading to journeyman beautician status: a) a trainee may apprentice for two 1400 hour periods and take a 10 week technical training course at the completion of each period, or (b) a trainee may take a 1400 hour technical/vocational training program first and obtain a 1400 hour reduction in the apprenticeship time required. This means that training entirely through apprenticeship requires somewhat more time (20 weeks), but the large time advantage which the technical/vocational training program previously enjoyed has been removed.

Candidates following either route above are required to pass second year apprenticeship exams (theory and practical) before obtaining journeyman certificates. The theory exam may be written upon completion of the required technical training (either type), but the practical exam can only be done after all required apprenticeship time has been served. In addition, the "true apprentices" (those who begin apprenticing without previous technical/vocational training) must pass first year apprenticeship exams at the conclusion of their first year technical training.

A third training route is still possible, but is being actively discouraged by the Apprenticeship Branch. People who have been working in the trade for a minimum of three years, but who were not apprenticed, are allowed to challenge journeyman

beautician proficiency exams (theory and practical). If they pass, they receive journeyman beautician certificates. Working this way violates the proficiency trade laws which require everyone engaged in the trade to be either a journeyman or a registered apprentice (Alberta Manpower Development Act, 1980). Therefore, this method of training should not be considered a viable alternative.

This leaves the two training patterns mentioned earlier. Both are equally acceptable and both lead to identical certification. The "true apprenticeship" route requires a candidate to obtain employment, working in a beautician salon under the supervision of a journeyman beautician, before registering with the Alberta Apprenticeship Board as an apprentice. Candidates receive wages for all training time - from the employer for the apprenticeship periods and from Canada Manpower for the technical training periods. The candidates who take technical/vocational training first receive no wages for that 1400 hour period, and must pay tuition of approximately $2500 for their training.

B. Statement of the Problem

Information is not available on the success of beautician trainees who take the 1400 hour technical training program and then attempt to find apprenticeship employment, complete their apprenticeship period, and write and pass the certification exams. The effects of changing the regulations regarding

beautician training are not known. Discussions with representatives from Marvel, one of the more prominent private vocational schools offering beautician training in Edmonton, have revealed that their enrollment is down from previous years. Also, there has been some feeling expressed to them, particularly by the Students' Finance Board, that many more students are being trained through the 1400 hour program than can find employment as apprentices to complete their training requirements.

Marvel representatives also indicated that they have no reliable criteria for determining which applicants will eventually complete the training program successfully. They are using the Apprenticeship Branch's minimum entrance criteria of: (a) minimum age of 16, and (b) minimum education of grade 10, or passing a written entrance exam. In many cases applicants do not supply transcripts to show courses completed and marks received.

This study attempted to determine if either method of training under the new regulations is preferable to the other. Certified journeyman status as a beautician was the criteria used to determine success. Marvel, in Edmonton, agreed to allow the researcher access to their student files for the period from 1984 to 1987. Marvel has been training beauticians for a number of years in three Alberta cities: Calgary, Edmonton, and Red Deer. In addition, they have been providing the 10 week technical training, under contract with the Apprenticeship Branch, for the "true apprentices" in Alberta since 1985.

At present, it is not known whether obtaining the 1400 hour technical training prior to apprenticing is of any advantage. Certainly it is more expensive for the student than beginning training as an apprentice. Prospective beautician trainees are making the decision concerning which route to follow on the basis of very limited factual information. They, and counsellors advising them, have no means of determining whether private vocational schools are a wise choice.

Marvel in Edmonton has enrolled an average of just under 200 students per year for the period under consideration. This allowed for data to be gathered for a sample of almost 800 students. Marvel student files provided information with regard to: (a) age and educational background, (b) sex, (c) type of financing used by students, (d) completion/termination rates, and (e) final theory and practical exam results received at Marvel.

The Alberta Apprenticeship and Trades Certification Branch agreed to the use of their information to follow up the Marvel students. This provided data with regard to whether each student: (a) apprenticed, and (b) completed journeyman certification requirements. Normally, the Apprenticeship Branch records do not show where each journeyman candidate took vocational/technical training. Nor do they record whether examinees are "true apprentices" or previous vocational/technical school graduates. This information may be available in the hard files kept for each student, but it is not in the computerized records and the Apprenticeship Branch does not calculate or

publish this type of breakdown in its annual statistical reports; only annual totals for each trade are shown.

The study was descriptive and retrospective, addressing questions of "what is" or "what exists." The main areas of concern were:

1. What was the probability that a Marvel beautician graduate would become a registered apprentice?
2. What percentage of Marvel graduates became certified Alberta beauticians?
3. Do any student attributes at the time of entrance into the Marvel program correlate highly with either 1 or 2 above, or with success in the Marvel program?
4. How do certification success rates of Marvel graduates compare to those of Alberta beautician apprentices in general?

C. Selected Definitions

1. Apprentice - a person who is at least 16 years of age, and who enters into a contract of apprenticeship in accordance with Part 3 under which he is to receive from or through his employer instruction and continuous employment based on the amount of work available in a designated trade (Manpower Development Act, 1980).

2. Apprenticeship exams - examinations, often both written theory and practical application, conducted by the Apprenticeship and Trade Certification Branch for persons registered as

apprentices. Usually these occur at the conclusion of each technical training period. Pass marks vary with individual trades.

3. Beautician - a person who performs any or all of the following operations with respect to the scalp, neck and face of persons: (a) cutting and trimming of hair by any means, (b) waving and curling of hair by any means, (c) coloring of hair by any means, or (d) facial and scalp massage (Alberta Regulation 422/83).

4. Completion of Apprenticeship Certificate - a certificate issued by the Apprenticeship and Trade Certification Branch to anyone who completes an apprenticeship by fulfilling the time requirements and also passing the final apprenticeship exams.

5. Designated trade - a trade designated by the Lieutenant Governor in Council as one to which the Manpower Development Act (1976) and its Regulations applies. A designated trade may be either a proficiency trade or a qualification trade.

6. Journeyman - a fully qualified tradesman who has satisfied all of the requirements for the particular trade, as set forth in the Manpower Development Act, 1980, including the General Regulations and the specific trade regulations. A journeyman is licensed to practice his/her particular trade within Alberta.

7. Journeyman Certificate - a certificate issued by Alberta Apprenticeship and Trade Certification to anyone meeting journeyman requirements for a designated trade. Two types

are issued: Proficiency Certificates and Qualification Certificates.

8. Journeyman exams - these may be of two types; either the final exams written by an Apprentice at the conclusion of his/her apprenticeship and technical training, or the "challenge" exams written by someone with acceptable training and/or experience who has never apprenticed. Successfully passing either type results in certification as a journeyman in the specific trade.

9. Marvel - short term for Marvel Trade and Business College (as of 1987), formerly Marvel Hairstyling and Esthetics School.

10. Private vocational school - any privately owned school offering vocational/technical training, or specific vocational preparation, registered with Alberta Advanced Education and subject to the Private Vocational Schools Act and Regulations.

11. Proficiency exam - an exam (often both theoretical and practical) conducted by the Apprenticeship and Trade Certification Branch for people who have some acceptable combination of training and experience, but who have not apprenticed. They are allowed to "challenge" the exam and, if they pass, are awarded a journeyman's certificate for the trade.

12. Proficiency trade - a trade designated under the Manpower Development Act, 1980, as one where certification is compulsory in order to practice the trade. This is done in the interest of public safety.

13. Qualification trade - a trade designated under the Manpower Development Act, 1980, as one where certification is voluntary.

Chapter 2

RELATED LITERATURE

Introduction

In 1987 there were 106 licensed private vocational schools operating in Alberta. Of these, 23 were offering barber/beautician training programs (Alberta Advanced Education, 1988) Apprenticeship has been formally organized in Alberta since 1944 and this method of training has expanded to include 36 qualification trades and 16 proficiency trades. Beautician is one of the proficiency trades, meaning that certification is compulsory in order to practice in Alberta (Alberta Manpower, 1986 and Manpower Development Act, General Regulations, 1987).

To date, very little research has been done with regard to either private vocational schools or apprenticeship training. Research specifically concerned with beautician training programs is virtually nonexistent.

This chapter will present information concerning related literature under three headings: (a) apprenticeship literature, (b) private vocational school literature, and (c) beautician training program literature. The scarcity of related literature makes it necessary to extend the time period being searched to include the past 15 to 20 years.

A. Apprenticeship Literature

A.1 Apprenticeship in Canada

Although apprenticeship has existed for a number of centuries in Europe, Canada has its own history which is much

more recent. The difference is well summarized in a publication by the Department of Labour, Canada (1957).

> This new concept recognizes journeyman status as the attainment of definite standards of practical skill and theoretical knowledge rather than the automatic result of serving a specified number of years of experience in the trade. (p. 7)

Thus, apprenticeship in Canada is more synonymous with organized, supervised training than with a lengthy time period of indentureship.

Most of the provinces in Canada have similar apprenticeship provisions, largely a result of federal government funding which has been available since 1944 (Ramsay, 1974, p. 14). Generally, legislation in each province provides for tripartite planning and control of apprenticeship, with representatives from industry, organized labour, and the provincial department responsible. Muir (1971) draws two conclusions regarding the development of the apprenticeship system in Canada following World War II:

> (a) The renewed interest in apprenticeship was sparked by the federal government and its willingness to invest heavily in apprenticeship training;
> (b) With the government's support of the system, some trade unions were fairly quick to establish the mechanism for restricting entry into the trade and for preventing "illegal men" from practising the trade. These restrictions were endorsed and enforced by the government (p. IV, 19).

Comparing the Canadian apprenticeship system to that existing in other countries Ginzberg (1977) stated

> What strikes me as an outsider looking at Canada is that I know of no other country in the world that has obligatory or compulsory licensing which determines the boundaries of certain skilled areas based upon prior completion of training.

It seems that through a government willingness to fund and provide classroom training for apprentices, and to examine technical and theoretical competencies of journeyman candidates Canada has developed a rather unique apprenticeship system.

One other major difference between Canadian apprenticeship and that of other countries is with regard to the age of entrants. A survey on entry into the apprenticeship system in Canada found that only 27 to 43 percent of apprentices entered apprenticeship directly from school, while 55 to 70 percent held two or more jobs prior to beginning apprenticeship (variations reflect different provinces). The mean age of entrants was found to be approximately 20.5 years for a sample of about 16,000 who entered apprenticeship between 1971 and 1980 (Employment and Immigration Canada, 1981). Weiermair (1984) notes this difference:

> As opposed to other industrial countries where concern about the maximum age (of apprentices) is more pronounced, legislative provisions in Canada call for a minimum age of sixteen, with no upper limit" (p. 46).

Earlier studies (Muir, 1971 and Bernier, 1971) found that while there was some controversy concerning the structure and content of apprenticeship programs in Canada, the acceptance of apprenticeship as a system of preparing skilled manpower was almost universal. More recent apprenticeship participation rates in Canada tend to show this to be true, with the number of apprentices per 1000 population in Canada falling between those of Great Britain and West Germany (Alberta Manpower, 1985).

Also, the number of persons apprenticing in Canada has risen substantially over the past few decades:

Fiscal Year	Apprentices Registered at End of Year
1950-51	10,141
1960-61	19,543
1970-71	45,280
1980-81	113,408

(Weiermair, 1984, p. 28)

As well as encouraging provincial apprenticeship programs through the provision of funding, the federal government has attempted to ensure some degree of uniformity of standards, to allow for a more mobile work force. To this end, the Interprovincial Standards Program, currently coordinated by the Canadian Employment and Immigration Commission, was established in 1959 (Watson, 1983). This program allows journeymen who pass the interprovincial examination in their trade to be awarded an Interprovincial Seal (Red Seal) which is attached to their tradesman's certificate. By December of 1982 there were over 150,000 recipients from 24 different trades in Canada (Watson, 1983). Interprovincial Seal holders must still apply for a provincial certificate in order to work in another province, but it is granted without further proof of competence in the trade. Unfortunately, this interprovincial agreement does not cover all trades, but Weiermair (p. 94) found that it covered in excess of 70 percent of all apprenticeship completions in 1979.

Parrott (1977) noted that:

> The unique aspect of apprenticeship that it is particularly appealing to anyone with a humanistic perspective is the fact that it provides a smooth, logical and relatively painless transition from the sheltered environment of school to the world of work. Education for employment and employment itself become one and the same.
> ...What makes the apprenticeship concept even more appealing is that its benefits do not just accrue to the trainee. The employer also gets a good deal in the process (p. 69).

However, Parrott (1977) also stated that, when giving career advice, parents, teachers and school counsellors too often fall prey to prescribing a college or university education. Weiermair (1984) also noted this problem.

> It seems that apprenticeship training in Canada...has always been considered the lowest form of training or education, to be mounted mainly to satisfy the needs of underprivileged groups (p. 5).

In discussing the problem of late entry into apprenticeship, the Employment and Immigration Canada (1981) study stated

> The school career guidance counselling services appear to be the single most important factor accounting for late entry into apprenticeship and one which has considerable potential to respond to the problem (p. 7).

The same theme was voiced by the Standing Senate Committee on Social Affairs, Science and Technology (1987):

> Witnesses also told us that the generalized perception of vocational training as being less valuable than "academic" training undermines the potential benefits of work-related training (p. 20).

Thus, while apprenticeship training is well recognized and supported by federal and provincial governments, industry, and organized labour in Canada, the foregoing serves to illustrate a

perennial image problem. Perhaps, as suggested, guidance counsellors working in school systems could do much to alleviate this problem.

Watson (1986) has noted that the recent introduction of the Canadian Jobs Strategy, and the federal-provincial negotiations which have resulted from this, provide an excellent opportunity for a thorough review of the major features of apprenticeship across Canada.

> Not only would national standards and standardization of training be possible, but curriculum content, sequencing, streamlining of training time and indentured time, would all come under study... (p. 4).

He sees a movement occuring already in Ontario's Skills Development Division where competency/performance based programs for skills training and vocationally-oriented education are being introduced. There is also a call for generic skill training in Australia, Britain, U.S.A. and Canada (Watson, 1986). In Canada, this idea of generic skills or families of skills was pioneered by Smith (1981), who believed that identifying essential similar elements common to a number of training programs would improve retraining and transferability of skills between occupations. With the changing technologies, emergence of new apprenticeship trades, and disappearance of some established ones, this has become a timely concern.

In summary, apprenticeship training in Canada has been playing an increasing role in supplying skilled workers since World War II. However, there is a continuing need to ensure that

the apprenticeship system is functioning well with regard to current technology and the needs of both workers and industry. In one sense Canada is fortunate because, given the amount of government involvement in apprenticeship training, changes can be coordinated on a system-wide basis. Of course, the other side of this is that the apprenticeship programs fall under provincial jurisdiction and any move toward further national standardization will require goodwill and cooperative effort from provincial authorities.

A.2 Apprenticeship in Alberta

The present system of apprenticeship in Alberta took effect in January of 1945, following passage of the Apprenticeship Act, 1944. Alberta had passed the Tradesmen's Qualification Act in 1936 to provide for certificates of proficiency in certain designated trades, but needed the new Act to take advantage of federal cost-sharing programs for the training of apprentices. Currently, apprenticeship in Alberta is regulated by the Manpower Development Act of 1976, which will be repealed and superceded by the Apprenticeship, Training and Certification Act (1985) when that Act is proclaimed in force.

Under the Manpower Development Act, responsibilities for apprenticeship training and certification rest with: (a) the Apprenticeship and Trade Certification Board, (b) the Apprenticeship and Trade Certification Division of Alberta Manpower, (c) Local Apprenticeship Committees (for each trade), and (d) Provincial Apprenticeship Committees (for each trade).

The Apprenticeship and Trade Certification Board advises the minister of Manpower on all matters relating to general conditions which affect trades training and certification. The Apprenticeship and Trade Certification Division of Alberta Manpower is responsible for all administrative functions involved in monitoring apprentice numbers, arranging the placement of apprenticeship technical training positions in institutions, ensuring that apprentices and employers follow apprenticeship regulations, and seeing that regulations governing certified tradesmen are complied with by both employers and tradesmen (Alberta Manpower, 1985).

Local apprenticeship committees may be established for any trade in any area of the Province where there is sufficient activity in that trade. These committees provide advice and assistance to the Executive Director, Apprenticeship and Trade Certification Division concerning a particular trade area, and attempt to mediate any training or certification disputes which arise between employers and apprentices in the area.

Each apprenticeship trade in Alberta has a provincial apprenticeship committee, appointed by the Apprenticeship and Trade Certification Board, and composed of local apprenticeship committee members from the specific trade plus other appointees. The responsibilities of each provincial committee are: (a) to advise the Apprenticeship Board with regard to apprenticeship and trade certification in its trade, (b) to review the training programs and certification requirements in its trade in order to

ensure their continuing relevance, and (c) to consider recommendations concerning their specific trade.

In addition, Alberta Advanced Education plays a role in apprenticeship training by purchasing training seats in technical institutes and colleges so that apprentices can receive theoretical training in their trade area. Also, Advanced Education initially funds the cost of these technical training seats, and then ensures the subsequent reimbursement of costs by the federal government.

Two different types of journeyman certificates are provided for by the Manpower Development Act. Certificates of Qualification are issued to successful candidates in the 36 apprenticeable trades where certification is voluntary. Successful candidates in the other 16 trades, where certification is compulsory, receive Certificates of Proficiency. Section 39 of the Act empowers the Lieutenant Governor in Council to designate any trade for compulsory certification "in the interest of public protection or general safety."

There is provision in the Manpower Development Act for both types of trades to be designated as apprenticeable upon petition by a representative group of employees and/or employers in any trade.

Alberta has provided for technical training as a component of apprenticeship since the program began in 1945 (Department of Labour-Canada, 1957). However, sometimes there is a time lag

between designation of a trade as apprenticeable and development of a technical course of studies (eg. the beautician trade). At present, there are four designated trades for which no technical training is available through the Apprenticeship Branch and one (sawfiler) which requires the technical training to be taken in British Columbia (Alberta Apprenticeship and Trade Certification, 1987).

Weiermair (1984) noted that the apprenticeship participation rate in Alberta was consistently above the Canadian average, and that in 1980 the new apprentice registrations in Alberta were 0.99 percent of the labour force compared to 0.35 for all of Canada (p. 30). Alberta Manpower (1985) found, in a comparative study, that with approximately 10 percent of the Canadian population, Alberta was training about 25 percent of the Canadian apprentices.

Alberta Manpower (1985) also reported some interesting findings with regard to the age of Alberta apprentices.

> While the minimum age necessary for entry into apprenticeship training is sixteen, the median entry age for apprentices currently in the system is twenty-one. Apprentices aged sixteen to twenty made up only 9.2 percent of total enrollments in September 1984, whereas those aged twenty-one to twenty-five comprised over 50 percent of total apprenticeship enrollments at the same point in time (p. 10).

The sixteen to twenty age group was found to have decreased from 22.8 percent of total registered apprentices in 1980. This was attributed to economic factors which increased unemployment and sharpened job competition (p. 11). An important feature of

apprenticeship as a method of training is highlighted by these data; it is only available to persons who have managed to secure employment. Also, once begun, apprenticeship training can be interrupted by loss of employment.

Three of the four recommendations from Alberta Manpower's study (1985) address this problem:

(1) Apprenticeship must be recognized as forming part of a broader technical training mandate.

> ....the current limited demand for skilled tradesmen and the high unemployment rate of apprentices indicate that the Alberta apprenticeship system must consider taking a greater responsibility for those who find themselves outside the apprenticeship system, including those unable to locate an employer willing to indenture them, or apprentices who find themselves laid off (p. 34).

(2) Renewed consideration should be given to temporarily implementing some form of work simulation to enable unemployed apprentices in their final period of training to complete their apprenticeship and attain journeyman status (p. 35).

(3) Those aged 16 to 20 have been a gradually decreasing percentage of aggregate apprentice registrants in Alberta since 1980, suggesting that there may be a growing need among this age group for technical

> training outside the formal apprenticeship training system (p. 35).
>
> (Here, a one-year general technical training, prior to apprenticeship, is suggested).

Thirty-one of the apprenticeable trades in Alberta have minimum education requirements of grade 10 or less. While this is in line with the minimum age requirements of 16 and the concept of flexibility, which the Apprenticeship Branch endorses, it does not reflect actual education levels of entrants. Employment and Immigration Canada (1985) found that 77.3 percent of Ontario apprenticeship entrants and 75.3 percent of those from British Columbia had completed secondary school. About 25 percent of these also had some university or college education (p. 16). The Alberta Manpower study (1985) found that 61 percent of Alberta apprenticeship entrants between 1980 and 1984 had completed grade 12, and a further 18.5 percent had completed grade 11 (p. 12). A direct relationship was also found between highest grade level completed and apprenticeship exam pass rates. Failure rates decreased with each successive grade, from 9.1 percent for those with grade 8 to 1.9 percent for those with more than grade 12 (p. 14).

The number of apprentices registered in Alberta increased steadily from about 8,500 in 1971 to over 28,000 in 1981, then declined to about 19,000 in 1985. As of December 31, 1987 there were 18,703 registered apprentices in Alberta (Apprenticeship and Trade Certification, 1987).

Ramsay (1974) investigated apprenticeship discontinuance in Alberta for three specific trades: electrical construction, carpentry, and motor mechanics. He states that

> ...there is little doubt in the investigator's mind that solutions to the apprenticeship discontinuance problem which do not include increased pay, improved on-the-job training, and continuous employment during indentureship will have little likelihood of succeeding (p. 132).

His study supported earlier findings (eg. Johnson, 1968 and Bernier, 1971) that the main reasons for discontinuance were: (a) inability to secure steady employment, (b) low wages during the apprenticeship period, and (c) the attraction of a better job elsewhere.

Completion rates for Alberta apprentices during the past five years are shown below:

Year	Completion Rate (%)
1983	60.8
1984	49.4
1985	49.9
1986	64.2
1987	86.0

(Alberta Apprenticeship and Trade Certification Annual Reports)

Completion rates are calculated by comparing the number of graduates in a given year to the number of new apprentices who entered training the requisite number of years previous (eg. four

years prior for motor mechanics, two years prior for beauticians).

B. Private Vocational Schools Literature

The Alberta Private Vocational Schools Act of 1979 places private vocational schools under the jurisdiction of Alberta Advanced Education. The Act provides for the appointment of a Director of Private Vocational Schools, and inspectors. Section 16.1 of the Act lists a number of rights of these inspectors, including the right to enter private vocational schools, and to inspect books, lessons, and equipment.

Alberta Regulation 110/80, the Private Vocational Schools Regulation, has some interesting provisions. Section 19 of these regulations applies to the necessary qualifications of instructors. For example, where a designated trade is being taught, instructors must hold the highest type of certificate available in that trade. Also, the Director of Private Vocational Schools is empowered to regulate the student/instructor ratio within private vocational schools. Section 4 spells out requirements for the licensing of a private vocational school. Included in the list of what may be required, either for an initial license or a renewal, is evidence of the need or demand for persons in the proposed area of vocational training (Sec. 4.1.i).

Private vocational schools are first mentioned in Alberta Advanced Education literature in 1975, when it is noted in the Third Annual Report (1973-74) that responsibility for these

schools had been transferred from Alberta Manpower to Alberta Advanced Education during that reporting year. However, very little data has been collected since that time. Advanced Education publishes annual Statistical Reports which list program offerings, full and part-time enrollments by course or program, and specific financial information for the public colleges, technical institutes, and universities within Alberta. There is also an annual report on private colleges, but private vocational schools seem to be overlooked.

A survey of manpower development within Alberta (Campbell, 1972), completed for the Department of Advanced Education and Manpower, uses the term "major educational institutions" which includes almost all types of post-secondary training, but not private vocational schools. Campbell found that

> In the case of those subjects falling within the major occupational classification of Service Occupations (baker, barber, beautician, cook), there were 6.5 times more people qualified by examination only, than prepared through training in Alberta's major educational institutions (p. 32).

He also found that, of 18,626 graduated and licensed personnel in 1970, 4,051 (22 percent) were qualified by government exam and license only (p. 38). A total of 951 beauticians were issued a Certificate of Proficiency, after being examined (p. 35). Undoubtedly, a large percentage of these persons being examined and licensed had received some training from a private vocational school.

A post-secondary graduate follow-up survey, conducted for Alberta Manpower in 1986, does a thorough study of all 1985 college and technical school graduates. Program completion numbers, employment statistics, and beginning salaries are included in Volume I. Volume II is an analysis of the findings and discusses topics such as: the labour force experience of graduates, graduate job search experience, and factors associated with finding training-related employment. Unfortunately, this survey does not even mention private vocational schools. There is no way of knowing whether results obtained by surveying public institution graduates can be generalized to graduates of private vocational schools.

The survey (Alberta Manpower 1986b) found that 66.2 percent of fine and applied arts graduates (the category which would include beauticians) were 20-24 years of age. A further 26.5 percent were 25-34 (p. 14). Graduates in this category (fine and applied arts) were 36 percent male and 64 percent female, compared to 48 percent and 52 percent, respectively, for all graduates (p. 14). The study found that 91.6 percent of fine and applied arts graduates were participating in the labour force, with 92.6 percent of these employed (p. 17). Approximately 75 percent of the graduates not in the labour force were attending school (p. 29).

C. Beautician Training Program Literature

Very little has been written in the literature concerning success rates for beautician training programs or student

attributes related to success at becoming a beautician. However, two pertinent studies, both from the United States, were discovered through an ERIC search.

A survey of selected vocational and technical programs was published by the Florida State Advisory Council on Vocational and Technical Education (1976). The study represented an attempt to identify valid and reliable sources of data whereby vocational programs might be evaluated in specified terms of effectiveness. Included in this study were vocational preparation programs for cosmetologists (the American term for beauticians).

The Florida training program at that time (1976) required cosmetologists to take a 1200 hour course of classroom and practical instruction, from either a public school (high school or college) or a private vocational school. After graduating from an approved training program, applicants were required to pass State Board exams (both theory and practical).

Completion rates for private schools were not presented, but for public schools the 1973-75 completion rate was 58.2 percent (p. 30). Graduates then took the State Board exams, and success rates for private and public school students were presented, as follows:

	Private		Public	
Year	1974	1975	1974	1975
Total Exams	1875	1515	967	886
Percent Passed Exams	76.26%	81.39%	73.11%	78.89% (p. 26)

In 1981, Caldwell Community college, North Carolina, conducted an evaluation of its cosmetology program (Pipes, 1981). Cosmetology students in North Carolina at that time had two options:

1. Successfully complete 1200 school hours and work a six-month apprenticeship under a licensed cosmetologist after passing the North Carolina State Board examination, or
2. Successfully complete 1500 school hours (substituting 300 hours for the apprenticeship) and pass the North Carolina State Board Examination to become a licensed cosmetologist (p. 7).

The State Board examinations involved both written tests (theory) and practical application.

Results presented here were based on surveys mailed to 87 early graduates (graduated more than two years previous) and 42 recent (within the past two years) graduates. The response rate for early graduates was 26 percent (23 persons). For recent graduates it was 50 percent (21 persons). Thus, the data was derived from very small samples and may not accurately reflect the total situation.

This study found that 95.2 percent of the recent graduate respondents had passed State Board exams and were certified cosmetologists. In contrast, only 74 percent of the early graduate respondents had become certified. Also, 86 percent of the recent graduates were employed in the field of cosmetology,

compared to 43 percent of the early graduates (p. 9). The study did not present any information on completion/termination rates for the college cosmetology program.

After a review and synthesis of numerous studies dealing with selection and admission of vocational students, Pucel (1980) draws a conclusion from these:

> Regarding predictive types of studies, there are no generalizable criteria that can be used by people selecting and admitting vocational students to optimize student selection and admission for a wide range of vocational programs. This seems to be true regardless of whether one defines success in terms of training success or job success. This does not mean that it is impossible to develop highly specific sets of criteria to predict success in a specific curriculum within a particular school (p. 27).

With regard to providing career information there is some Canadian and Alberta literature of government origin. The Canadian Classification and Dictionary of Occupations (CCDO), published in 1971, provides general information under classification number 6143. Beautician is specifically addressed under number 6143-118. Details are given with regard to required abilities, necessary entrance education level, length of training, and interest and personality traits of successful workers. The information is of limited use to prospective beautician trainees because of the age of the publication and because provincial variations in requirements are not mentioned.

Alberta Advanced Education and Manpower published Profiles in 1979. These presented the Alberta information for a number of occupations, including beautician (Services Occupations category,

number 6143-1198). This single-sheet document outlines duties of beauticians, working environment qualifications and training, employment and advancement opportunities, and typical earnings. It does not provide any data on number of persons employed in the trade or the number of new beauticians licensed in Alberta each year. Nor has it been updated, and the training requirements given do not reflect the change which took place with the passage of Alberta Regulation 422/83.

Employment and Immigration Canada (1982) published career outlines for Alberta. This is a set of four volumes, expanding on information from the CCDO and making it more specific to Alberta. The two-page write-up for beauticians covers duties, preparation and training, working conditions, personal qualities necessary, future outlook, and sources of further information. The future outlook, to 1985, predicts about average growth of demand for beauticians. Again, training requirements are out of date, and no employment numbers are given.

A more extensive occupational monograph is published by the University of Toronto Guidance Centre (1985). Provincial variations in training requirements for beauticians are given, varying from nine months of training and no apprenticeship in Prince Edward Island to 6000 hours of apprenticeship in Quebec. A number of provinces provide for both classroom training and apprenticeship experience. This publication notes that "...the average graduate works at the occupation only from four to six years" (p. 3). Advantages and disadvantages of the occupation

are also discussed, in addition to the type of information found in previously noted documents.

Employment and Immigration Canada (1987b) has published the most up-to-date information on the beautician occupation, through the Canadian Occupational Projection System (COPS), a labour supply and demand information and data bank. Information from the 1971 and 1981 Canadian census, and from industry and institutions, is used to provide current data and to make forecasts to 1995. Regarding employment trends and projections, for barbers, hairdressers and related occupations the following information is given:

	Employment			Average Annual Growth Rate (%)		
	1981	1986	1995	1971-81	1981-86	1987-95
This Occupation	101,200	121,400	134,600	1.7	3.7	0.9
All Occupations				3.2	1.1	1.3

(p. 20)

Between 1987 and 1995 a total requirement of 38,400 barbers and hairdressers is projected for Canada; 9,500 tor new job openings and 28,900 for replacement openings (p. 240). Geographic distribution of employment is also given, with Alberta having 8.7 percent of the Canadian barbers and hairdresses in 1981 (p. 240). By combining the previous two, one could predict that about 3350 job openings for barbers and hairdresses would occur in Alberta between 1987 and 1995.

The publication (Employment and Immigration Canada, 1987) also describes, in general terms, the job environment, educational and background skills required, the nature of the supply, market conditions and job prospects, and earnings. With regard to supply, it is noted that "The average career length is relatively short, ranging from four to six years" (p. 241). Earnings for fully qualified practitioners are said to range from $275 to $375 per week (p. 241). Thirty-one percent of barbers and hairdressers were found to be under 25 years of age, with only 7 percent over 54 in 1981. Also 25 percent were male and 75 percent were female (p. 240).

The Northern Alberta Institute of Technology (Nait) is the only public post-secondary institution in Alberta which offers a beautician 1400 hour training program. Each year Nait publishes Placement Fact Sheets, which is a survey of the previous year's graduates with regard to employment. A summary of the 1983 to 1986 graduate data for the Nait ladies' hairstyling program is shown below:

Year	No. of Graduates	No. Employed	No. Not Employed or Not Traced	Average Monthly Starting Salary
1983	30	23	7	$ 800
1984	13	12	1	800
1985	29	22	7	690
1986	19	15	4	809

Information on terminations or failures is not reported, nor is there any indication how many successfully complete the required apprenticeship or pass the journeyman beautician exams.

In summary, very few studies are available in the literature which relate to the present study. Much of what is available is of government origin. Nothing is known regarding beautician success rates ~~in private~~ vocational school programs. Nor is there any information on 1400 hour beautician graduates with regard to their success at becoming apprentices or at completing all requirements to acquire journeyman certificates. Very little has been written with regard to student attributes which correlate with success in beautician training or employment. Given the two training routes available to prospective beautician trainees, additional information in this area would be helpful, both to them and to counsellors who attempt to advise them.

Chapter 3

METHODS AND PROCEDURES

Introduction

The methods and procedures of data collection and analysis are presented in this chapter. For simplification and clarification, these have been organized under three headings: (1) Agreement from Marvel and Apprenticeship Branch, (2) Collection of data, and (3) Analysis of data. To avoid duplication, the results are not presented until chapter four.

Agreement from Marvel and Apprenticeship Branch

Two initial meetings with my advisor, Norm Gibault (Marvel Program Development Director), and Henrietta Komarnisky (Marvel School Director) were held in October and November, 1987, to investigate the feasibility of doing this study and to establish some basic guidelines. The Marvel representatives expressed a desire to know what happens to graduates of their beautician program with regard to their chosen careers. They also indicated that the Alberta Students' Finance Board has expressed concern regarding the number of borrowers who either terminate their training program at Marvel or fail to find employment upon completion.

A sample of Marvel student files was examined to determine the type of data which could be extracted from these. Student files were all found to contain information on: date of birth, sex, highest school grade completed, and type of financing. In addition, high school transcripts were available for some of the

students. Marvel final marks, in both theory and practical, were available for those students who had completed the Marvel 1400 hour program.

The Marvel representatives agreed to make student files for the years under consideration (1984 to 1987) available for research purposes. They also agreed to the questions which the study was to address, namely: (a) whether any student attributes at the time of entry into Marvel were predictive of success, either at Marvel or in becoming certified as a journeyman beautician, (b) what proportion of Marvel students eventually became registered as apprentices in the beautician trade, (c) what proportion of Marvel students became certified journeyman beauticians, and (d) how success rates of Marvel students compared to success rates of persons taking beautician training by some other means.

Answering some of these questions required information from the Alberta Apprenticeship Branch. To accomplish this objective, a meeting with my advisor, Don Bell (Executive Director of the Alberta Apprenticeship Branch), and Wayne Nixon (Director of Registration and Certification, Alberta Apprenticeship) was held in December of 1987. Purposes of the research were outlined and the Alberta Apprenticeship representatives agreed to cooperate by tracing former Marvel students through their computerized records of apprentices registered in the beautician trade. They required some time to finalize the details and confirmation of their assistance was received by telephone in January of 1988. It was

agreed that names and social insurance numbers would be provided for all students who had registered at Marvel, by calendar year, from 1984 through 1987. The Director of Registration and Certification would then have each of these students traced through the apprenticeship computer records to determine if each; (a) had ever registered as an apprentice and, if so, the present status of each, (b) had ever written any apprenticeship or journeyman proficiency examinations (and, if so, whether a passing mark was achieved) and, (c) had received certification as a journeyman beautician.

The apprenticeship representatives also agreed to provide information on total numbers of persons in the beautician trade. Initially it was proposed to separate these into those who had taken technical/vocational training as a beautician prior to becoming an apprentice, and those who had not. This proved not to be possible because of the amount of time involved and the various other commitments of the apprenticeship staff and computers.

Collection of Data

Student files for the years 1984 through 1987 were obtained from Marvel in January of 1988. Information from each file was transferred to 40 line, 80 column data sheets, with one line being used for each student. For each student the following was recorded:

Columns(s)	Information
1 & 2	year of completion
3 - 5	three digit I.D. number
6	sex
7 & 8	day of birth
9 & 10	month of birth
11 & 12	year of birth
13 & 14	highest grade completed
15 - 19	type of financing
20 & 21	day of entry
22 & 23	month of entry
24 & 25	year of entry
26 & 27	day of completion
28 & 29	month of completion
30	whether student terminated
31 & 32	entrance exam mark (if written)
33 & 34	final Marvel theory mark (if written)
35 & 36	final Marvel practical exam mark (if taken)
37 - 69	*high school marks from selected subjects (if available)
70	apprenticeship code (if registered)
71	apprenticeship period (if registered)
72	journeyman exam results (if written)

*Courses selected to record were: English 10/13, math 10/13/15, biology 10, chemistry 10, science 11, social studies 10, beauty

culture 12, English 20/23, math 20/23/25, biology 20, chemistry 20, beauty culture 22, English 30/33, math 30/33, biology 30, chemistry 30, and beauty culture 32.

Data were collected for 778 students in total, with the following breakdown by year: 1984-215, 1985-224, 1986-169 1987-170. In all cases, the year is the year in which a student completed or terminated the Marvel 1400 hour program of instruction. The data were virtually complete for columns one through 30. However, for the other columns, not all data were available for all students. The Marvel theory exam was written by 563 students and the Marvel practical exam by 566. Some high school marks were available for 246 students, but only 9 of these were from 1984 while 102 were from 1986. Also, marks were not available for all high school courses selected. For example, 184 students had English 10/13 marks and 181 had math 10/13/15 marks, but only 28 had chemistry 30 marks and 34 had beauty culture 32 marks. In some cases, a transcript showed only grade 12 or only grade 11 results.

The Apprenticeship Branch data showed that 462 of the former Marvel students had been or were currently registered with them. Of these, 413 were students who had graduated from Marvel and 49 were students who had failed or terminated at Marvel.

The data from the 40 by 80 recording sheets was keypunched by Division of Educational Research Division staff at the Faculty of Education, University of Alberta. The keypunched cards were

read by the DERS cardreader to enter the data into the IBM/MTS mainframe computer. This phase was completed in April of 1988.

In June of 1988, when the apprenticeship representatives indicated that a breakdown of beautician apprentices by previous technical/vocational training could not be done, it was decided to gather data on the totals for all beautician apprentices. Copies of the Executive Director's Report and Annual Statistical Review were obtained for 1984 through 1987 from Alberta Apprenticeship and Trade Certification. These review statistics for all apprenticeship trades, listing each separately. Totals are given under headings such as: total registered, new apprentices, apprenticeship cancellations, graduates, technical training attendance, apprenticeship examinations, and journeyman certificates issued.

An interview was also conducted with Bob Payette, Program Development Officer for Barber and Beautician Trades at Alberta Apprenticeship. He provided information with regard to changes in the Beautician Trade Regulation under the Manpower Development Act since 1983. He also assisted with the interpretation of the statistics regarding beautician apprentices contained in the Executive Director's Report.

Analysis of Data

In April of 1988 a printout of all Marvel data entered into the University of Alberta IBM/MTS mainframe computer was obtained. This was manually compared with the raw data from the 40 by 80 recording sheets, on a random line basis, to check for

errors in keypunching. Next, frequencies for all data were run and printed. These were checked for obvious errors (eg. months in excess of 12, grade levels of 0, unusually low subject marks). All possible corrections were entered, using a terminal and basing corrections on the raw data sheets. New frequencies were run and printed for all data that had been corrected. These new frequencies were checked and that data as then entered was accepted as being as complete and error-free as possible.

Data analysis included descriptive statistics, crosstabulations, chi-square analyses, correlations and multiple step-wise regressions. Results of these are presented in the next chapter. All analysis was done using the IBM/MTS mainframe computer and SPSS-X, version 2.2 software.

Chapter 4

DATA ANALYSIS AND RESULTS

Introduction

This chapter presents the results of data analysis. Descriptive statistics are presented first, under the following subheadings: (1) Student population attributes, (2) Success rates at Marvel, (3) Success rates at becoming certified beauticians, and (4) Success rates of all Alberta beautician candidates. The next section describes correlations and relationships between student attributes and outcomes. Two subsections, success at Marvel, and success at obtaining journeyman beautician certification, are utilized. The final part of the chapter presents multiple stepwise regression equations which were calculated for selected attribute variables and Marvel theory and practical marks.

Descriptive Statistics

1. Student population attributes.

Data were collected for 778 Marvel students who completed or terminated their training during the four years from 1984 through 1987. Table 4.1 shows the distribution by year. The date of birth had not been obtained for one student, and the grade level completed was missing for seven students. Termination information was also missing for one student. Otherwise, the data was complete for all 778 students for the first 36 columns. Of course, not all students had written the Marvel entrance exam

(156 had) or the Marvel theory and practical exams (563 and 566, respectively).

Columns 37 through 70, which held data on high school results from selected subjects, were rather incomplete. The Marvel student files contained high school transcripts for only 246 of the 778 students. Of these 246, some listed only grade 12 or grade 11 results, and some only beauty culture course results. There were more marks for English than for any other subject (English 10/13 - 184, English 20/23 - 68, English 30/33 - 140) and there were more marks from grade 10 courses than from grade 11 or 12 courses. These frequencies can be compared with the grade levels completed frequencies (Table 4.2) for an indication of the missing marks. For example, 443 students indicated that they had completed grade 12, but only 140 English 30/33 marks were available from transcripts in the student files.

Table 4.1

Number of Students by Year of Completion

Year	Frequency	Percent	Cumulative %
1984	215	27.6	28
1985	224	28.8	56
1986	169	21.7	78
1987	170	21.9	100
	778		

Another related problem was the students' interpretation of the question "highest grade completed" on the Marvel application form. Comparing available transcripts with students' answers revealed that, in some cases, what was really being answered was "highest grade attended." A number of students with only five or ten credits from a particular grade would report that grade as "completed." The number of missing high school transcripts made a correction of this data impossible and Table 4.2 lists grade levels completed as reported by the students.

Table 4.2

Highest Grade Completed as Indicated by Marvel Entrants

Grade	Frequency	Percent	Cumulative %
8	6	1	1
9	41	5	6
10	144	19	25
11	137	18	43
12	443	57	100
	771		

$\bar{x}$ = 11.26, SD = 0.99, 7 did not indicate

During the four years (1984-87), Marvel enrolled 684 female students (88%) and 94 male students (12%).

A computer program was written and run to calculate student ages, at the time of entry, to the nearest whole year. Results are shown in Table 4.3. Although the ages ranged from 16 through 50, 19% of the students entered at age 18 and 20% at age 19. The three ages of 18, 19 and 20 comprised 49% of the total enrollment. With regard to age, the middle two quartiles of students were 19 through 23 years.

Table 4.3

Age (to nearest year) of Marvel Entrants

Age	Frequency	Percent	Cumulative %
16	3	0	0
17	34	4	5
18	149	19	24
19	156	20	44
20	81	10	54
21	57	7	62
22	53	7	69
23	41	5	74
24	23	3	77
25	23	3	80

Table continues

Table 4.3 continued

Age (to nearest year) of Marvel Entrants

Age	Frequency	Percent	Cumulative %
26	18	2	82
27	13	2	84
28	16	2	86
29	14	2	88
30	11	1	89
31	7	1	90
32	8	1	91
33	9	1	92
34	7	1	93
35	9	1	94
36	6	1	95
37	9	1	96
38	2	0	96
39	5	1	97
40	2	0	97
41	5	1	98
42	6	1	99
43	1	0	99
44	1	0	99
45	2	0	99

Table continues . . .

Table 4.3 continued

Age (to nearest year) of Marvel Entrants

Age	Frequency	Percent	Cumulative %
46	1	0	99
47	2	0	100
48	1	0	100
49	1	0	100
50	1	0	100
	777		

x = 22.49 median = 20.0 range = 34.0

SD = 5.10 mode = 19.0

One missing birthdate made age calculation impossible.

The number of students utilizing each of five types of financing for their training at Marvel is shown in Table 4.4.

Table 4.4

Type of Financing used by Marvel Students

Financed By	Freq. Yes	Freq. No	Totals
Self	161 (21%)	617 (79%)	778 (100%)
Relatives	257 (33%)	521 (67%)	778 (100%)
Student Finance Board	505 (65%)	273 (35%)	778 (100%)
Canada Manpower	61 (8%)	717 (92%)	778 (100%)
Other Government	37 (5%)	741 (95%)	778 (100%)

Another computer program was run to determine how many students had more than a single source of financing. Results are shown in Table 4.5. Since only seven students used more than two sources,

attention was focused on identifying the number of students using each double source, or each combination of two types of financing. The breakdown for these 232 students is shown in Table 4.6. A decision was made to exclude from consideration those combinations with frequencies of fewer than five. This left four dual sources for consideration: self and relatives, self and Students' Finance Board, relatives and Students' Finance Board, and Students' Finance Board and Canada Manpower. The five single sources and four dual sources of financing accounted for 751 of the 778 students, allowing 27 students in seven different categories of financing to not be considered. The smallest cell frequency remaining under consideration was 20.

Table 4.5

Number of Different Sources of Financing used by Marvel Students

No. of Sources	Frequency	Percent	Cumulative %
None (not reported)	3	0	0
1	536	69	69
2	232	30	99
3	7	1	100
	778		

Table 4.6

Types of Dual Sources of Financing used by Marvel Students

Financing Source	In Combination With: Relatives	Student Finance Board	Canada Manpower	Other Government
Self	27	49	4	3
Relatives		119	0	2
Student Finance Board			20	4
Canada Manpower				4

2. Success rates at Marvel

A crosstabulation, shown in Table 4.7, was computed to determine how many Marvel students passed, failed, or withdrew in each of the four years. One student was omitted because of the missing termination data. An examination of the crosstabulation revealed a smaller percentage of the students passing in each succeeding year. Also, a decrease in total number of students enrolled from the first two years to the last two years is shown. A chi-square analysis of the table showed the relationship between year of completion and proportion of students who passed, failed, or withdrew to be significant beyond the 0.001 level.

Table 4.7

Crosstabulation of Marvel Passes, Failures, and Withdrawals by Year

Year	Passed Row % Column %	Failed Row % Column %	Withdrew Row % Column %	Row Total
1984	173	8	34	215
	80.5	3.7	15.8	27.7
	32.7	16.3	17.1	
1985	147	15	61	223
	65.9	6.7	27.4	28.7
	27.8	30.6	30.7	
1986	106	10	53	169
	62.7	5.9	31.4	21.8
	20.0	20.4	26.6	
1987	103	16	51	170
	60.6	9.4	30.0	21.9
	19.5	32.7	25.6	
Column Total	529	49	199	777
	68.1	6.3	25.6	100

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
23.875	6	0.0006	10.66	None

The average of the theory and practical marks received by students who passed each year at Marvel was also subjected to chi-square analysis. The crosstabulation of year of completion and average of the two marks (grouped in ranges of five) is shown in Table 4.8. The relationship between year of completion and average mark obtained is highly significant (in excess of 0.0001). A much higher proportion (19.4%) of the graduates received averages above 84 percent in 1987 than in any other year. In 1985, 77.6 percent of the graduates achieved averages below 80 percent, but only 52.5 percent of the 1987 graduates had averages lower than 80 percent.

Table 4.8

Crosstabulation of Average Marks (Ranges) by Year of Completion for Those Who Passed Both Theory and Practical

Frequency / Row % / Column %	Average of Marks (%) 70-74	75-79	80-84	Above 84	Row Total
	33	82	57	1	173
1984	19.1	47.4	32.9	0.6	32.7
	24.4	35.8	41.9	3.4	
	48	66	29	4	147
1985	32.7	44.9	19.7	2.7	27.8
	35.6	28.8	21.3	13.8	
	32	49	21	4	106
1986	30.2	46.2	19.8	3.8	20.0
	23.7	21.4	15.4	13.8	
	22	32	29	20	103
1987	21.4	31.1	28.2	19.4	19.5
	16.3	14.0	21.3	69.0	
Column	135	229	136	29	529
Total	25.5	43.3	25.7	5.5	100

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
65.809	9	0.0000	5.65	None

3. Success rates at becoming certified beauticians

The data from The Apprenticeship Branch, (contained in columns 71 to 73) was examined to determine what success Marvel students had with regard to: (a) becoming registered as apprentices, and (b) passing the exams required for journeyman certification.

Table 4.9 shows, by year, the Marvel graduates who: (a) challenged the journeyman's exam without apprenticing, (b) apprenticed and then wrote the journeyman's exam and passed, and (c) were apprenticed, but withdrew without achieving journeyman certification. Of the 147 persons who wrote the exam without apprenticing, 139 had completed Marvel training in 1984.

Another crosstabulation was run to determine whether students who challenged the exam without apprenticing passed or failed. This is shown in Table 4.10. Sixteen students failed, 15 from 1984 and one from 1985. The people who passed were composed of two groups, 14 who received permanent journeyman certificates and 7 who received temporary certificates. Temporary certificates are given by the Apprenticeship Branch for marginal exam results.

The Marvel graduates who were registered as apprentices, but not yet finished, were computed by a third crosstabulation. Table 4.11 shows these results. These 82 persons do not appear in either of the two previous tables.

Table 4.9

Crosstabulation of Marvel Graduates: Year of Completion by Apprenticeship Code

Frequency Row % Column %	Apprenticeship Code 0 Wrote Proficiency Exam Did Not Apprentice	1 Apprenticed & Passed Exams	3 Was Apprenticed, but Withdrew	Row Totals
	139	12	0	151
1984	92.1	7.9		45.6
	94.6	6.7		
	2	104	3	109
1985	1.8	95.4	2.8	32.9
	1.4	58.1	60.0	
	5	54	2	61
1986	8.2	88.5	3.3	18.4
	3.4	30.2	40.0	
	1	9	0	10
1987	10.0	90.0		3.0
	0.7	5.0		
Column	147	179	5	331
Total	44.4	54.4	1.5	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. <5
256.78	6	0.0000	0.151	5 of 12 (41.7%)

Table 4.10

Crosstabulation of Marvel Graduates: Year of Completion by Proficiency Exam, All People with Code "0" (Did Not Apprentice)

Frequency Row % Column %	Proficiency Exam Results			
	Passed	Failed	Temporary Certificate	Row Totals
	119	15	5	139
1984	85.6	10.8	3.6	94.6
	96.0	93.8	71.4	
	1	1	0	2
1985	50.0	50.0		1.4
	0.8	6.3		
	3	0	2	5
1986	60.0		40.0	3.4
	2.4		28.6	
	1	0	0	1
1987	100.0			0.7
	0.8			
Column	124	16	7	147
Total	84.4	10.9	4.8	100

Table 4.11

Crosstabulation of Marvel Graduates still Apprenticing:

Year of Completion by Period of Apprenticeship

Frequency / Row % / Column %	Apprenticeship Period 2 (Second Year)	9 (Technical Training Completed)	Row Totals
	2	0	2
1984	100.0		2.4
	2.7		
	12	0	12
1985	100.0		14.6
	16.0		
	13	7	20
1986	65.0	35.0	24.4
	17.6	100.0	
	48	0	48
1987	100.0		58.5
	64.9		
	75	7	82
	91.5	8.5	100.0

Table 4.12 is drawn from the previous four tables. The results obtained from the Apprenticeship Branch are cumulative. For example, the 153 Marvel graduates of 1984 who are shown to have registered with the Apprenticeship Branch represents all those who have registered between 1984 and April of 1988. Two of these 153 are shown to be still in period two of apprenticeship, while 136 have completed all journeyman requirements and obtained certificates. Of the 1987 Marvel graduates, 48 were in period two of apprenticeship, with only 10 having completed all journeyman requirements by April of 1988.

The students considered above had all graduated from the Marvel training program. Similar crosstabulations were computed for students who had registered at Marvel, but either withdrew or failed the program. Tables 4.13 through 4.15 present the results of these crosstabulations. A total of 49 persons who had failed or withdrawn at Marvel registered with the Apprenticeship Branch. Of these, 22 are still apprenticing (6 in period one of apprenticeship), 11 out of 19 successfully challenged the journeyman's exam without apprenticing, and six apprenticed and completed all requirements. That is, 17 have become certified beauticians to date. Also, four have received temporary certificates. These results are summarized in Table 4.16, which can be compared to Table 4.12.

Table 4.12

Cumulative Success of Marvel Graduates: Apprenticeship and Certification

Frequency % of Grads % of Entrants	Total Enrolled at Marvel	Withdrew from Marvel	Failed at Marvel	Total Grad. from Marvel	Passed J. Exam Without Apprenticing	Apprenticed and Passed Exams	Failed J. Exams Without Apprenticing	In Period 2 of Apprenticeship	Withdrew from Apprenticeship	Completed Tech.Training but not Work Experience	Total Registrd. Apprntc. Board	Total Obtained Journeyman Certificate
	215	34	8	173	124	12	15	2	0	0	153	136
1984	-	-	-	100.0	71.7	6.9	8.7	1.2	-	-	88.4	78.6
	100.0	15.8	3.7	80.5	57.5	5.6	7.0	0.9	-	-	71.2	63.3
	223	61	15	147	1	104	1	12	3	0	121	105
1985	-	-	-	100.0	0.7	70.7	0.7	8.2	2.0	-	82.3	71.4
	100.0	27.4	6.7	65.9	0.4	46.6	0.4	5.4	1.3	-	54.3	47.1
	169	53	10	106	5	54	0	13	2	7	81	59
1986	-	-	-	100.0	4.7	50.9	-	12.3	1.9	6.6	76.4	55.7
	100.0	31.4	5.9	62.7	3.0	32.0	-	7.7	1.2	4.1	47.9	34.9
	170	51	16	103	1	9	0	48	0	0	58	10
1987	-	-	-	100.0	1.0	8.7	-	46.6	-	-	56.3	9.7
	100.0	30.0	9.4	60.6	0.6	5.3	-	28.2	-	-	34.1	5.9
	777	199	49	529	131	179	16	75	5	7	413	310
Totals	-	-	-	-	24.8	33.8	3.0	14.2	0.9	1.3	78.1	58.6
	100.0	25.6	6.3	68.1	16.9	23.0	2.0	9.7	0.6	0.9	53.2	39.9

Table 4.13

Crosstabulation of Marvel Withdrawals/Failures: Year by Apprenticeship Code

	Apprenticeship Code			
	0	1	3	
Frequency Row % Column %	Did Not Apprentice Wrote Proficiency Exam	Apprenticed & Passed Exams	Was Apprenticed, but Withdrew	Row Totals
	9	1	0	10
1984	90.0	10.0		37.0
	47.4	16.7		
	5	3	1	9
1985	55.6	33.3	11.1	33.3
	26.3	50.0	50.0	
	4	2	1	7
1986	57.1	28.6	14.3	25.9
	21.1	33.3	50.0	
	1	0	0	1
1987	100.0			3.7
	5.3			
Column	19	6	2	27
Totals	70.4	22.2	7.4	100.0

Table 4.14

Crosstabulation of Marvel Withdrawal Failures: Year by Proficiency Exam All People are Code "0" (Did Not Apprentice)

Frequency Row % Column %	Proficiency Exam Results Passed	Failed	Temporary Certificate	Row Totals
	5	2	2	9
1984	55.6	22.2	22.2	47.4
	45.5	50.0	50.0	
	4	1	0	5
1985	80.0	20.0		26.3
	36.4	25.0		
	1	1	2	4
1986	25.0	25.0	50.0	21.1
	9.1	25.0	50.0	
	1	0	0	1
1987	100.0			5.3
	9.1			
Column	11	4	4	19
Totals	57.9	21.1	21.1	100.0

Table 4.15

Crosstabulation of Marvel Withdrawals/Failures Still Apprenticing: Year by Period of Apprenticeship

Frequency Row % Column %	Apprenticeship Period 1 (First Year)	 2 (Second Year)	Row Totals
1984	0	3	3
		100.0	13.6
		18.8	
1985	1	2	3
	33.3	66.7	13.6
	16.7	12.5	
1986	1	5	6
	16.7	83.3	27.3
	16.7	31.3	
1987	4	6	10
	40.0	60.0	45.5
	66.7	37.5	
Column	6	16	22
Totals	27.3	72.7	100.0

Table 4.16

Cumulative Success of Marvel Withdrawals/Failures: Apprenticeship and Certification

Frequency % Withdrawals/ Fails % Entrants	Total Enrolled Marvel	Total Graduated Marvel	Total Withdrawals and Failures	Passed J. Exam Without Apprenticing	Apprenticed and Passed Exams	Failed J. Exams Without Apprenticing	In Period 1 of Apprenticeship	In Period 2 of Apprenticeship	Withdrew From Apprenticeship	Total Registrd. Apprntc. Board	Total Obtained Journeyman Certificate
	215	173	42	7	1	2	0	3	0	13	8
1984	-	-	100.0	16.7	2.4	4.8	-	7.1	-	31.0	19.0
	100.0	80.5	19.5	0.9	0.1	0.3	-	0.4	-	1.7	1.0
	223	147	76	4	3	1	1	2	1	12	7
1985	-	-	100.0	5.3	3.9	1.3	1.3	2.6	1.3	15.8	9.2
	100.0	65.9	34.1	0.5	0.4	0.1	0.1	0.3	0.1	1.5	0.9
	169	106	63	3	2	1	1	5	1	13	5
1986	-	-	100.0	4.8	3.2	1.6	1.6	7.9	1.6	20.6	7.9
	100.0	62.7	37.3	0.4	0.3	0.1	0.1	0.6	0.1	1.7	0.6
	170	103	67	1	0	0	4	6	0	11	1
1987	-	-	100.0	1.5	-	-	6.0	9.0	-	16.4	1.5
	100.0	60.6	39.4	0.1	-	-	0.5	0.8	-	1.4	0.1
	777	529	248	15	6	4	6	16	2	49	21
Totals	-	-	100.0	6.0	2.4	1.6	2.4	6.5	0.8	19.8	8.5
	100.0	68.1	31.9	1.9	0.8	0.5	0.8	2.1	0.3	6.3	2.7

4. Success rates of all Alberta beautician candidates

Data from Alberta Apprenticeship Annual Reports were compiled for the years 1984 through 1987. These figures represent all persons registered with Alberta Apprenticeship for each year and include the Marvel students already discussed. Table 4.17 shows the number of apprentices registered in each year, the number who graduated or cancelled their registration, the number of new apprentices, and the number who attended the 10-week apprenticeship technical training. Graduations plus cancellations does not equal total registered because, within each year, there are both new apprentices and continuations. A person can register with the Apprenticeship Branch at any point during a year and could also complete the required apprenticeship hours at any time during a year. There was no technical training offered during 1984 because this was the first year of the new apprenticeship program. The three graduates in 1984 would have received all technical training through a program such as the Marvel 1400 hour beautician training program.

It is interesting to note from Table 4.17 that, while the number of apprentices taking second year technical training has increased each year, the number taking first year technical training has not. Those taking first year training are the "true apprentices," who have begun apprenticing without enough previous technical training for second year placement. Those in second year include the "true apprentices" who continue, plus any persons trained in a 1400 hour beautician program who failed the theory exam conducted by the Apprenticeship Branch.

Graduates in Table 4.17 refers only to persons who were on the apprenticeship route and completed all requirements. Table 4.17 shows the total number of journeyman beautician certificates issued each year. This total is higher each year than the number of apprenticeship graduates because it includes people who challenged the journeyman proficiency exams without ever apprenticing.

Table 4.18 also shows a comparison of second year apprenticeship and challenge proficiency exams written each year. The number of challenge exams has decreased sharply over the four years, while the number of second year exams has increased. These exams have equal status in that either will qualify a candidate to receive a journeyman's certificate. The difference is only in method of preparation. Second year exams are written only by apprentices, while proficiency exams are written by persons who have never formally been on the apprenticeship program.

Marvel graduates who wrote the Apprenticeship Branch's exams, and those who received journeyman beautician certificates, are included in the two tables above. These Marvel graduates are shown separately in Table 4.18. In all four years the pass rate for Marvel graduates exceeded the total Provincial pass rate. One limitation of this comparison is the cumulative nature (discussed earlier) of the Marvel data. The Provincial totals are not cumulative.

Table 4.17

Beautician Apprentice Statistics (Alberta)

Frequency % Total Registered	Total Registered	Graduates	Cancellations	New Apprentices	Technical Training Yr. 1	Yr. 2
1984	81	3	3	85	0	0
	100.0	3.7	3.7	104.9	-	-
1985	628	94	27	668	42	36
	100.0	15.2	4.3	106.4	6.7	5.8
1986	841	750	64	716	29	92
	100.0	86.8	7.6	85.1	3.4	10.9
1987	1057	670	120	834	36	130
	100.0	63.4	11.4	79.0	3.4	12.3

Table 4.18

Beautician Apprentice Branch Exams and Certificates Issued

	Practical Exams Conducted		Total Practical Exams	Journeyman Certificates Issued	Journeyman Certificates as % of Practical Exams
	2nd Year Apprenticeship	Proficiency Challenge			
1984	0	1556	1556	1067	68.6
1985	178	641	819	601	73.4
1986	816	199	1015	962	94.8
1987	797	147	944	828	87.7
TOTALS			4334	3458	79.8

Table 4.19

Marvel Grads: Apprenticeship Branch Exams and Certificates Issued

	Grads Who Did Practical Exam	Grads Who Obtained J. Certificates	J. Certificates as % of Practical Exams
1984	151	136	90.1
1985	106	105	99.1
1986	59	59	100.0
1987	10	10	100.0
Totals	326	310	95.1

Correlations and Relationships between Student Attributes and Outcomes

1. Success at Marvel

Pearson product-moment correlations were calculated for the variables: age, Marvel theory mark, Marvel practical mark, and all individual high school subject marks available. These are shown in Table 4-20. While a number of these correlations are significant beyond the 0.01 level, they tend to be quite low. The strongest correlation (between chemistry 30 marks and Marvel theory marks) is of moderate strength (0.5646), but only involves 21 students. A correlation of 0.5106 was found, for 59 students,

Table 4.20

Pearson Correlation Coefficients: Age, Marvel Theory & Practical Marks with High School Marks

	Age	Eng 1	Math 1	Biol 1	Chem 1	Sci 1	Social 1	BC 1	Eng 2
Age	1.000	-.0398	-.0639	-.0283	-.0522	.0586	.0475	.0337	.0717
	(777)	(184)	(181)	(108)	(81)	(74)	(172)	(52)	(168)
	P= .	P= .296	P= .196	P= .385	P= .322	P= .310	P= .268	P= .406	P= .178
Theory	.1802	.2975	.1491	.3881	.4303	.3168	.3426	-.0451	.3441
	(563)	(144)	(139)	(88)	(67)	(55)	(135)	(45)	(135)
	P= .000	P= .000	P= .040	P= .000	P= .000	P= .009	P= .000	P= .384	P= .000
Practical	.2335	.0592	.0104	.0263	.1424	.0704	.0256	.1432	-.0203
	(566)	(144)	(139)	(87)	(67)	(55)	(135)	(45)	(134)
	P= .000	P= .240	P= .452	P= .404	P= .125	P= .305	P= .384	P= .174	P= .408

	Math 2	Biol 2	Chem 2	BC 2	Eng 3	Math 3	Biol 3	Chem 3	BC 3
Age	-.0111	.0856	-.0821	.0277	-.0622	.1031	.0073	.3755	-.0204
	(117)	(71)	(40)	(41)	(140)	(59)	(41)	(28)	(34)
	P= .453	P= .239	P= .307	P= .432	P= .233	P= .219	P= .482	P= .024	P= .454
Theory	.0200	.5106	.1946	-.0107	.1439	.2821	.4856	.5645	-.1188
	(100)	(59)	(36)	(37)	(112)	(47)	(32)	(21)	(29)
	P= .422	P= .000	P= .128	P= .475	P= .065	P= .027	P= .002	P= .004	.270
Practical	.0718	.0964	.0150	.1854	-.0289	.1841	-.0738	.0278	-.0079
	(99)	(59)	(36)	(37)	(112)	(47)	(32)	(21)	(29)
	P= .240	P= .234	P= .465	P= .136	P= .381	P= .108	P= .344	P= .452	P= .484

Correlation coefficient/(no. of cases)/1-tailed sig.

between biology 20 marks and Marvel theory marks. None of the variables correlated even moderately with the Marvel practical exam mark, the highest correlations being 0.3455 for the Marvel theory mark and 0.2335 for the student's age.

Crosstabulations were computed comparing type of student financing with marks received from Marvel. Table 4.21 shows eight types of financing compared to exam results for those students who wrote the theory exam. The total of 544 is less than the total number of students who wrote the exam (563) because methods of financing involving very few students were not included. A chi-square analysis of the cell frequencies shows the relationship between type of financing and theory mark received to be significant beyond the 0.05 level.

Table 4.22 shows a significant relationship (beyond the 0.01 level) to exist between type of financing and the Marvel practical marks. One less category of marks was used for practical marks than for theory marks because the range of practical marks was narrower. The total of 546 is again less than the 566 who did the practical exam, for the same reason.

Table 4.21

Crosstabulation of Methods of Financing by Marvel Theory Marks

Frequency Row % Column %	Marvel Theory Marks (Ranges, Percents)					Row Totals
	<70	70 - 74	75 - 79	80 - 84	85 +	
Self	1	9	15	16	16	57
	1.8	15.8	26.3	28.1	28.1	10.5
	3.0	5.9	11.0	12.3	17.2	
Relative	5	34	25	17	6	87
	5.7	39.1	28.7	19.5	6.9	16.0
	15.2	22.4	18.4	13.1	6.5	
Student	13	58	41	56	41	209
Finance	6.2	27.8	19.6	26.8	19.6	38.4
Board	39.4	38.2	30.1	43.1	44.1	
Canada	1	6	4	4	5	20
Manpower	5.0	30.0	20.0	20.0	25.0	3.7
	3.0	3.9	2.9	3.1	5.4	

Table continues

Table 4.21 continued

Crosstabulation of Methods of Financing by Marvel Theory Marks

Frequency Row % Column %	Marvel Theory Marks (Ranges, Percents) <70	70 - 74	75 - 79	80 - 84	85 +	Row Totals
Self &	1	6	4	4	6	21
Relations	4.8	28.6	19.0	19.0	28.6	3.9
	3.0	3.9	2.9	3.1	6.5	
Self &	4	11	9	10	9	43
Student	9.3	25.6	20.9	23.3	20.9	7.9
Finance Board	12.1	7.2	6.6	7.7	9.7	
Relatives	6	26	34	19	7	92
& Student	6.5	28.3	37.0	20.7	7.6	16.9
Finance Board	18.2	17.1	25.0	14.6	7.5	
Student Finance	2	2	4	4	3	15
Board &	13.3	13.3	26.7	26.7	20.0	2.8
Manpower	6.1	1.3	2.9	3.1	3.2	
Column Totals	33	152	136	130	93	544
	6.1	27.9	25.0	23.9	17.1	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
41.458	28	0.049	0.91	12 of 40 (30.0%)

Table 4.22

Crosstabulation of Method(s) of Financing

by Marvel Practical Marks

Frequency Row % Column %	Marvel Practical Marks (Ranges, Percents)				
	>70	70-74	75-79	80+	Row Totals
Self	1	13	27	16	57
	1.8	22.8	47.4	28.1	10.4
	3.2	6.0	12.3	20.5	
Relatives	8	38	34	9	89
	9.0	42.7	38.2	10.1	16.3
	25.8	17.4	15.5	11.5	
Student	10	86	77	37	210
Finance	4.8	41.0	36.7	17.6	38.5
Board	32.3	39.4	35.2	47.4	
Canada	1	4	13	2	20
Manpower	5.0	20.0	65.0	10.0	3.7
	3.2	1.8	5.9	2.6	
Self &	1	6	13	1	21
Relatives	4.8	28.6	61.9	4.8	3.8
	3.2	2.8	5.9	1.3	

Table continues

Table 4.22 continued

Crosstabulation of Method(s) of Financing

by Marvel Practical Marks

Frequency / Row % / Column %	Marvel Practical Marks (Ranges, Percents) >70	70-74	75-79	80+	Row Totals
Self & Student Finance Board	1 2.3 3.2	16 37.2 7.3	19 44.2 8.7	7 6.3 9.0	43 7.9
Relatives & Student Finance Board	8 8.8 25.8	47 51.6 21.6	33 36.3 15.1	3 3.3 3.8	91 16.7
Student Finance	1 6.7 3.2	8 53.3 3.7	3 20.0 1.4	3 20.0 3.8	15 2.7
Column Totals	31 5.7	218 39.9	219 40.1	78 14.3	546 100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
46.113	21	0.001	0.85	8 of 32 (25.0%)

A crosstabulation of type of financing and whether or not a student withdrew is shown in Table 4.23. Students funded through government sources other than Canada Manpower had the highest termination rate, with students funded exclusively by the Students' Finance Board being next highest. Students financed only by relatives had the lowest termination rate, with those financed by a combination of their savings and Students' Finance Board funding being next lowest. A chi-square analysis of the data indicated a significant relationship between type of financing and program completion, with significance in excess of 0.01.

A crosstabulation of sex and termination (Table 4.24) shows a significant relationship, beyond 0.01, between sex and program completion. Almost 40 percent (39.4) of the males left without completing the program, compared to 23.7 percent of the females.

Crosstabulations of student sex and Marvel theory and practical marks (Tables 4.25 and 4.26) did not produce similar results. Chi-square analysis showed that relationships between sex and either theory or practical results at Marvel were not significant. Males and females who complete the program appear to do equally well on the final exams.

The variables of age, high school average, and grade level were correlated with whether or not a student terminated the Marvel program. Results are presented in Table 4.27. A significant correlation ($p<0.001$) of low negative value

Table 4.23

Crosstabulation of Method(s) of Financing by Whether or not a Student Completed the Marvel Program

Frequency Row % Column %	Completed	Terminated	Row Totals
Self	58	14	72
	80.6	19.4	9.6
	10.4	7.3	
Relatives	90	13	103
	87.4	12.6	13.7
	16.1	6.8	
Student	208	98	306
Finance	68.0	32.0	40.7
Board	37.2	51.0	
Canada	23	8	31
Manpower	74.2	25.8	4.1
	4.1	4.2	
Other	13	11	24
Government	54.2	45.8	3.2
	2.3	5.7	

Table continues

Table 4.23 continued

Crosstabulation of Method(s) of Financing by Whether or not a Student Completed the Marvel Program

Frequency Row % Column %	Completed	Terminated	Row Totals
Self &	20	7	27
Relatives	74.1	25.9	3.6
	3.6	3.6	
Self & Student	42	7	49
Finance Board	85.7	14.3	6.5
	7.5	3.6	
Relative	90	29	119
& Student	75.6	24.4	15.8
Finance Board	16.1	15.1	
Student Finance	15	5	20
Board & Manpower	75.0	25.0	2.7
	2.7	2.6	
Column	559	192	751
Totals	74.4	25.6	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
25.751	8	0.001	5.11	None

Table 4.24

Crosstabulation of Student Sex by Marvel Program Completion

Frequency Row % Column %	Completed	Terminated	Row Totals
Male	57	37	94
	60.6	39.4	12.1
	9.8	18.6	
Female	522	162	684
	76.3	23.7	87.9
	90.2	81.4	
Column Totals	579	199	778
	74.4	25.6	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
9.863	1	0.002	24.04	None

(After Yates' Correction)

Table 4.25

Crosstabulation of Student Sex by Marvel Theory Marks

Theory Marks (%)

Frequency Row % Column %	Male	Female	Row Totals
<70	5	35	40
	12.5	87.5	6.9
	8.8	6.7	
70 - 74	18	142	160
	11.3	88.8	27.6
	31.6	27.2	
75 - 79	14	129	143
	9.8	90.2	24.7
	24.6	24.7	
80 - 84	10	128	138
	7.2	92.8	23.8
	17.5	24.5	
85 +	10	88	98
	10.2	89.8	16.9
	17.5	16.9	
Column	57	522	579
Totals	9.8	90.2	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
1.738	4	0.784	3.94	1 of 10 (10.0%)

Table 4.26

Crosstabulation of Student Sex and Marvel Practical Marks

Practical Marks (%)

Frequency Row Pct. Col. Pct.	Male	Female	Row Totals
<70	5	28	33
	15.2	84.8	5.7
	8.8	5.4	
70 - 74	29	206	235
	12.3	87.8	40.6
	50.9	39.5	
75 - 79	16	216	232
	6.9	93.1	40.1
	28.1	41.4	
80 +	7	72	79
	8.9	91.1	13.6
	12.3	13.8	
Column Totals	57	522	579
	9.8	90.2	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
5.056	3	0.168	3.25	1 of 8 (12.5%)

Table 4.27

Pearson Correlation Coefficients for Student Attributes and Program Termination

	Age	Average	Grade	Term
Age	1.0000	.0166	-.0917	.0308
	(777)	(246)	(771)	(777)
	P= .	P= .398	P= .005	P= .196
Average	.0166	1.0000	.1756	.0136
	(246)	(246)	(266)	(246)
	P= .398	P= .	P= .003	P= .416
Grade	-.0917	.1756	1.0000	-.2131
	(771)	(246)	(771)	(771)
	P= .005	P= .003	P= .	P= .000
Term	.0308	.0136	-.2131	1.000
	(777)	(246)	(771)	(778)
	P= .196	P= .416	P= .000	P= .

(Coefficient/(Cases)/1-Tailed Sig)

"." is printed if a coefficient cannot be computed.

($r=-0.2131$) was found between grade level and termination. Other correlations were not significant.

2. Success at obtaining journeyman beautician certification

Point biseral correlations were calculated for the continuous variables of: age, highest grade level, Marvel theory mark, Marvel practical mark, and high school average; and the dichotomous variables: code, period, and exam. Code refers to whether or not a person had been apprenticed, period to whether or not a person was currently registered as an apprentice, and exam to whether or not (s)he had passed the exams required for certification.

Table 4.28 shows the correlations (point biserial is a Pearson product-moment type calculation) for all Marvel students. Tables 4.29 through 4.32 show correlations by year of completion/termination at Marvel.

In Table 4.28, although many of the correlations are significant beyond the 0.05 level, they tend to be of only low value. The strongest relationship, between high school grade level and passing the beautician certification exam, has a correlation coefficient of only 0.2196.

The analysis of individual years shows the correlations to vary from year to year. While the correlation between grade level and exam is significant beyond the 0.01 level in each year, the coefficients vary from 0.1971 (1987) to 0.2735 (1985).

Table 4.28

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (All Students 1984-1987)

	Code	Period	Exam
Age	-.1055	-.0129	-.0615
	(777)	(777)	(777)
	P= .002	P= .360	P= .043
Grade	.1348	-.0567	.2196
	(771)	(771)	(771)
	P= .000	P= .058	P= .000
Theory	.0833	-.1167	.1980
	(563)	(563)	(563)
	P= .024	P= .003	P= .000
Practical	.0211	.0114	.0679
	(566)	(566)	(566)
	P= .308	P= .394	P= .053
Average	.1255	-.0806	.0766
	(246)	(246)	(246)
	P= .025	P= .104	P= .116

Coefficient/(Cases)/1-tailed sig.

Table continues

Table 4.28 continued

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (All Students 1984-1987)

Variable	Cases	Mean	Std. Dev.
Age	777	22.4865	6.0980
Grade	771	11.2581	.9893
Theory	563	77.8792	7.1935
Practical	566	75.2597	6.1432
Average	246	58.7821	8.7587
Code	778	.2468	.4314
Period	778	.1362	.3542
Exam	778	.4254	.4947

Table 4.29

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1984)

	Code	Period	Exam
Age	-.0534	-.0171	-.0542
	(214)	(214)	(214)
	P= .218	P= .402	P= .215
Grade	.1572	-.0494	.2089
	(211)	(211)	(211)
	P= .011	P= .238	P= .001
Theory	.0664	-.1668	.2228
	(178)	(178)	(178)
	P= .189	P= .013	P= .001
Practical	.0563	-.0034	.1861
	(178)	(178)	(178)
	P= .228	P= .482	P= .006
Average	.	.2123	-.5179
	(9)	(9)	(9)
	P= .	P= .292	P= .077

Coefficient/(Cases)/1-tailed sig.

Table continues

Table 4.29 continued

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1984-1987)

Variable	Cases	Mean	Std. Dev.
Age	214	22.6262	6.2918
Grade	211	11.3412	.9346
Theory	178	78.9157	6.0952
Practical	178	75.4944	3.1681
Average	9	56.9901	5.3161
Code	215	.0605	.2389
Period	215	.0326	.2443
Exam	215	.6698	.4714

Table 4.30

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1985 Students)

	Code	Period	Exam
Age	-.1385	-.0019	-.1031
	(224)	(224)	(224)
	P= .019	P= .489	P= .062
Grade	.2578	-.0940	.2735
	(224)	(224)	(224)
	P= .000	P= .081	P= .000
Theory	.2850	-.1951	.3153
	(159)	(159)	(159)
	P= .000	P= .007	P= .000
Practical	.2561	-.1663	.2824
	(159)	(159)	(159)
	P= .001	P= .018	P= .000
Average	.1809	-.0162	.1674
	(71)	(71)	(71)
	P= .066	P= .447	P= .081

Coefficient/(Cases)/1-tailed sig.

Table continues

Table 4.30 continued

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1985 Students)

Variable	Cases	Mean	Std. Dev.
Age	224	22.1741	5.7723
Grade	224	11.2768	.9815
Theory	159	76.4528	7.4983
Practical	159	74.9434	3.9124
Average	71	59.8116	9.0614
Code	224	.4955	.5011
Period	224	.0670	.2505
Exam	224	.5000	.5011

Table 4.31

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1986 Students)

	Code	Period	Exam
Age	-.0647	-.1204	-.0163
	(169)	(169)	(169)
	P= .202	P= .059	P= .417
Grade	.2415	-.0846	.2154
	(168)	(168)	(168)
	P= .001	P= .138	P= .003
Theory	.2128	-.1816	.2133
	(113)	(113)	(113)
	P= .012	P= .027	P= .012
Practical	.2086	-.1421	.1790
	(113)	(113)	(113)
	P= .013	P= .067	P= .029
Average	.0806	-.2068	.0287
	(104)	(104)	(104)
	P= .208	P= .018	P= .386

Coefficient/(Cases)/1-tailed sig.

Table continues

Table 4.31 continued

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1986 Students)

Variable	Cases	Mean	Std. Dev.
Age	169	22.1302	5.5168
Grade	168	11.1607	1.0109
Theory	113	77.9823	6.7691
Practical	113	73.9027	3.3805
Average	104	58.3828	8.6479
Code	169	.3491	.4781
Period	169	.1538	.3619
Exam	169	.3787	.4865

Table 4.32

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1987 Students)

	Code	Period	Exam
Age	-.1231	-.0136	-.0171
	(170)	(170)	(170)
	P= .055	P= .430	P= .412
Grade	.1772	-.0106	.1971
	(168)	(168)	(168)
	P= .011	P= .446	P= .005
Theory	.1349	-.0311	.1354
	(113)	(113)	(113)
	P= .077	P= .372	P= .076
Practical	.0730	.0450	.0705
	(116)	(116)	(116)
	P= .218	P= .316	P= .226
Average	.0823	.0542	.0833
	(62)	(62)	(62)
	P= .262	P= .338	P= .262

Coefficients/(Cases)/1-tailed sig.

Table continues

Table 4.32 continued

Point Biserial Correlation of Student Attributes with Apprenticeship Branch Status (1987 Students)

Variable	Cases	Mean	Std. Dev.
Age	170	23.0765	6.7823
Grade	168	11.2262	1.0422
Theory	113	78.1504	8.4338
Practical	116	76.6552	11.5676
Average	62	58.5332	9.0479
Code	170	.0529	.2246
Period	170	.3412	.4755
Exam	170	.0647	.2467

The highest correlation coefficients found were in 1985. For that year, the relationships between Marvel theory mark and Provincial exam (r=0.3153) and Marvel theory mark and code (r=0.2850) are both significant beyond the 0.001 level. The 1985 relationship between Marvel practical mark and Provincial exam mark has a coefficient of 0.2824, and is also highly significant. The 1987 data show the lowest correlation coefficients of any of the tables. In fact, there appears to be a complete absence of relationships among the variables, with the possible exception of highest grade level attended.

Methods of financing were collapsed into four categories and crosstabulations were computed for these and code, period, and exam. The crosstabulation with code is shown in Table 4.33. Significant differences in cell frequencies were found for these data. For example, 43.6% of students who used Students' Finance Board funding in combination with any other source had been registered as apprentices and completed all certification requirements. The registration and completion rate, for those financed only by the Students' Finance Board was 12.1%; while the rate for students supported only by Canada Manpower and/or any other government source was 12.7%. Chi-square analysis of these data showed the relationship between type of financing and registration and completion as an apprentice beautician to be significant beyond the 0.001 level.

Table 4.33

Crosstabulation of Method(s) of Financing and Apprenticeship Code

		Methods of Financing				
	Frequency Row % Column %	Self, Relatives Or Both	Just Student Finance Board	Student Finance Board Plus Others	Manpower and/or Govern-ment	Row Totals
0	Had not	148	269	106	48	571
	apprenticed	25.9	47.1	18.6	8.4	76.0
	& completed	73.3	87.9	56.4	87.3	
1	Had appren-	54	37	82	7	180
	ticed &	30.0	20.6	45.6	3.9	24.0
	completed	26.7	12.1	43.6	12.7	
	requirements					
	Column	202	306	188	55	751
	Totals	26.9	40.7	25.0	7.3	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
68.176	3	0.0000	13.18	None

Table 4.34

Crosstabulation of Method(s) of Financing and Apprenticeship Period

Apprentice-ship Code	Method(s) of Financing: Self, Relatives Or Both	Just Student Finance Board	Student Finance Board Plus	Manpower and/or Govern-ment	Row Totals
Not currently apprenticing	187 28.8 92.6	246 37.8 80.4	166 25.5 88.3	51 7.8 92.7	650 86.6
Currently apprenticing	15 14.9 7.4	60 59.4 19.6	22 21.8 11.7	4 4.0 7.3	101 13.4
Column Totals	202 26.9	306 40.7	188 25.0	55 7.3	751 100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
18.563	3	0.0003	7.40	None

Table 4.34 shows a crosstabulation of the collapsed methods of financing and period (being currently registered as an apprentice beautician). Here again, a chi-square analysis shows relationships to be significant beyond the 0.001 level. Students

financed by themselves or relatives and students financed entirely by Canada Manpower or some other government source had the lowest percentages currently apprenticing (7.4% and 7.3% respectively). In contrast, 19.6 percent of those financed entirely by the Students' Finance Board were currently enrolled as apprentices.

A crosstabulation of the four methods of financing above and whether or not the Provincial certification exam was passed is shown in Table 4.35. Students financed by the students' Finance Board and some other source had the highest percentage who had written the exam and passed (53.2%), closely followed by those financed by relatives and/or themselves (51.5%). Students funded only by the Students' Finance Board, or by Canada Manpower or another government source had much lower rates of having written and passed (32% and 25.5% respectively). A chi-square analysis of cell frequencies for this data shows the relationship between type of financing and having written and passed the Provincial exam to be significant beyond the 0.001 level.

Table 4.35

Crosstabulation of Method(s) of Financing and Apprenticeship Branch Exams

Method(s) of Financing	Apprenticeship Branch Exams: Failed or Did Not Write	Apprenticeship Branch Exams: Passed	Row Totals
Self, Relatives	98	104	202
or Both	48.5	51.5	26.9
	22.5	32.9	
Just Student	208	98	306
Finance Board	68.0	32.0	40.7
	47.8	31.0	
Student Finance	88	100	188
Board & any other	46.8	53.2	25.0
	20.2	31.6	
Manpower, &/or	41	14	55
Government	74.5	42.1	7.3
	9.4	4.4	
Column Totals	435	316	751
	57.9	42.1	100.0

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. <5
35.783	3	0.0000	23.14	None

Tables 4.36 through 4.38 show crosstabulations of student sex and code, period of registration, and exam. While differences between the sexes are evident in all of these tables, the only relationship which was significant at the 0.05 level is between sex and code. Here, a chi-square analysis showed the relationship to be significant beyond the 0.03 level. Only 14.9 percent of the males had apprenticed and met requirements for certification, compared to 26.0 percent of the females.

Table 4.36

Crosstabulation of Student Sex and Apprenticeship Code

	Frequency Row % Column %	Male	Female	Row Totals
	Had not	80	506	586
0	apprenticed	13.7	86.3	75.3
	& completed	85.1	74.0	
	Had apprenticed	14	178	192
1	and completed	7.3	92.7	24.7
	requirements	14.9	26.0	
	Column Totals	94	684	778
		12.1	87.9	100.0

χ^2	D. F.	Sig.	Min. E.F.	Cells with E.F.<5
4.925	1	0.0265	23.20	None

(After Yates' Correction)

Table 4.37

Crosstabulation of Student Sex and Apprenticeship Period

	Frequency / Row % / Column %	Male	Female	Row Totals
0	Not currently apprenticing	79	596	675
		11.7	88.3	86.3
		94.0	87.1	
1	Currently apprenticing	15	88	103
		14.6	85.4	13.2
		16.0	12.9	
	Column Totals	94	684	778
		12.1	87.9	100.0

χ^2	D. F.	Sig.	Min. E.F.	Cells with E.F.<5
0.445	1	0.505	12.45	None

(After Yates' Correction)

Table 4.38

Crosstabulation of Student Sex and Apprenticeship Branch Exams

Frequency Row % Colum %	Male	Female	Row Totals
Did not	63	384	447
write or	14.1	85.9	57.5
failed	67.0	56.1	
Passed	31	300	331
	9.4	90.6	42.5
	33.0	43.9	
Column	94	684	778
Totals	12.1	87.9	100.0

χ^2	D. F.	Sig.	Min. E.F.	Cells with E.F.<5
3.570	1	0.059	39.99	None

(After Yates' Correction)

3. Multiple regression of student attribute variables and Marvel marks

Table 4.39 shows correlation coefficients for a multiple stepwise regression computed using the dependent variables Marvel theory mark and Marvel practical mark. Independent variables were student age, grade, sex, and type of financing. These variables were available for a total of 539 Marvel students. The dependent variables and age and grade are continuous, while the variables of sex and type of financing are dichotomous.

Table 4.39

Multiple Regression Correlation Matrix for Dependent Variables: Marvel Theory and Practical Marks

Variable	Mean	Std. Dev.
Theory	77.833	7.249
Practical	75.494	5.305
Age	22.334	6.183
Grade	11.390	.947
Sex	1.905	.293
Fin. 1	.295	.456
Fin. 2	.375	.485
Fin. 3	.269	.444
Fin. 4	.061	.240

N of Cases = 539

Types of Financing

Fin. 1 = Self, Relatives, or Both

Fin. 2 = Just S.F.B.

Fin. 3 = S.F.B. plus any Other

Fin. 4 = Manpower, and/or Government

Table continues

Table 4.39 continued

Multiple Regression Correlation Matrix for Dependent Variables: Marvel Theory and Practical Marks

Correlation, 1-tailed Sig:

	Theory	Pract.	Age	Grade	Sex	Fin. 1	Fin. 2	Fin. 3	Fin. 4
Theory	1.000	.357	.180	.199	.021	.029	.056	-.029	-.115
	.999	.000	.000	.000	.310	.251	.095	.248	.004
Pract	.357	1.000	.243	.050	.074	.020	.107	-.135	-.005
	.000	.999	.000	.125	.042	.319	.007	.001	.456
Age	.180	.243	1.000	-.154	-.104	-.003	.089	-.122	.050
	.000	.000	.999	.000	.008	.475	.019	.002	.123
Grade	.199	.050	-.154	1.000	-.008	.099	-.027	.024	-.179
	.000	.125	.000	.999	.430	.011	.265	.285	.000
Sex	.021	.074	-.104	-.008	1.000	.070	-.038	-.047	.030
	.310	.042	.008	.430	.999	.052	.191	.139	.246
Fin. 1	.029	.020	-.003	.099	.070	1.000	-.501	-.392	-.165
	.251	.319	.475	.011	.052	.999	.000	.000	.000
Fin. 2	.056	.107	.089	-.027	-.038	-.501	1.000	-.470	-.198
	.095	.007	.019	.265	.191	.000	.999	.000	.000
Fin. 3	-.029	-.135	-.122	.024	-.047	.392	-.470	1.000	-.155
	.248	.001	.002	.286	.139	.000	.000	.999	.000
Fin. 4	-.115	-.005	.050	-.179	.030	-.165	-.198	-.155	1.000
	.004	.456	.123	.000	.246	.000	.000	.000	.999

Results of the multiple regression for Marvel theory marks are shown in Table 4.40. The three variables grade, age and Canada Manpower or other government financing contributed significantly to yield a multiple R of 0.304. The first two were correlated positively, while having had Canada Manpower or other government funding correlated negatively with theory mark obtained. The adjusted R square value for this multiple regression was 0.0875, meaning that about 8.75 percent of the variance in Marvel theory marks is explained by these three independent variables.

Table 4.40

Results of Multiple Stepwise Regression for Dependent Variable: Marvel Theory Marks

Descriptive Statistics in Table 4.39

Step Number	Variables Entered	Multiple R	Multiple R Change	Adjusted R Square	Adjusted R Square Change	Sig. F Change
1	Grade	0.1994	0.1994	0.0380	0.0380	0.000
2	Age	0.2920	0.0926	0.0819	0.0439	0.000
3	Fin. 4	0.3043	0.0123	0.0875	0.0056	0.039

Table 4.41 shows results of the multiple regression for Marvel practical marks. Four independent variables (age, Students' Finance Board financing in combination with another source, sex, and grade level) were found to be significant, producing a multiple R of 0.296. The adjusted R square value for

these was 0.0807. In other words, about 8.07 percent of the variance in Marvel practical marks can be accounted for by variance in these four variables.

Table 4.41

Results of Multiple Stepwise Regression for Dependent Variable: Marvel Theory Marks

Descriptive Statistics in Table 4.39

Step Number	Variables Entered	Multiple R	Multiple R Change	Adjusted R Square	Adjusted R Square Change	Sig. F Change
1	Age	0.2433	0.2433	0.0574	0.0574	0.000
2	Fin. 3	0.2653	0.0220	0.0669	0.0095	0.011
3	Sex	0.2814	0.0161	0.0740	0.0071	0.024
4	Grade	0.2958	0.0144	0.0807	0.0067	0.028

Another multiple regression was computed using all of the variables above plus the independent variable average (the average of all high school subject marks available). This reduced the number of cases to 175. The correlation matrix for these variables is shown in Table 4.42.

Results of the multiple regression for Marvel theory marks are given in Table 4.43. Three independent variables, age, average, and financing by self and/or relatives were found to be significant. The multiple R value for these three was 0.433, yielding an adjusted R square of 0.173. Being funded by oneself and/or one's relatives was negatively correlated with marks received, while age and high school average were correlated positively.

Table 4.44 shows the multiple regression for the same independent variables and the dependent variable of Marvel practical mark. Only the variables of student age and sex were found to be significant, with a multiple R of 0.276. The adjusted R square value for this multiple regression was 0.0657. Thus, while adding in the variable of average improved the multiple R for Marvel theory marks, a lower multiple R value for Marvel practical marks resulted.

The dichotomous variable of student sex was coded either 1 (male) or 2 (female). Thus, the significant relationships found for Marvel practical marks can be interpreted to mean that females will score slightly higher than males on the practical

exams. Age of the student was a significant predictor in all multiple regressions run, meaning that older students tend to do somewhat better at both theory and practical.

Table 4.42

Multiple Regression Correlation Matrix for Dependent Variables: Marvel Theory and Practical Marks

Variable	Mean	Std. Dev.
Average	58.523	8.255
Theory	77.789	6.880
Practical	75.497	5.261
Age	20.423	4.135
Grad	11.669	.638
Sex	1.920	.272
Fin. 1	.309	.463
Fin. 2	.320	.468
Fin. 3	.366	.483
Fin. 4	.006	.076

N of Cases = 175

Types of Financing

Fin. 1 = Self, Relatives, or Both

Fin. 2 = Just S.F.B.

Fin. 3 = S.F.B. plus any Other

Fin. 4 = Manpower, and/or Government

Table continues

Table 4.42 continued

Multiple Regression Correlation Matrix for Dependent Variables: Marvel Theory and Practical Marks

Correlation 1-tailed Sig:

	Average	Theory	Practical	Age	Grade	Sex	Fin. 1	Fin. 2	Fin. 3	Fin. 4
Average	1.000	.241	.095	-.100	.186	.032	.140	.030	-.112	.038
	.999	.001	.107	.093	.007	.335	.032	.349	.070	.310
Theory	.241	1.000	.308	.272	.144	-.021	-.208	.198	.004	.024
	.001	.999	.000	.000	.029	.389	.003	.004	.477	.374
Practical	.095	.308	1.000	.225	.109	.132	-.087	.154	-.065	-.007
	.107	.000	.999	.001	.075	.040	.126	.021	.196	.462
Age	-.100	.272	.225	1.000	-.103	-.123	-.162	.138	.023	-.008
	.093	.000	.001	.999	.087	.052	.016	.035	.382	.459
Grade	.186	.144	.109	-.103	1.000	-.021	.076	.069	-.145	.040
	.007	.029	.075	.087	.999	.390	.159	.184	.028	.302
Sex	.032	-.021	.132	-.123	-.021	1.000	.106	-.069	-.038	.022
	.335	.389	.040	.052	.390	.999	.082	.183	.307	.385
Fin. 1	.140	-.208	-.087	-.162	.076	.106	1.000	-.458	-.507	-.051
	.032	.003	.126	.016	.159	.082	.999	.000	.000	.253

Table continues

Table 4.42 continued

Multiple Regression Correlation Matrix for Dependent Variables: Marvel Theory and Practical Marks

	Average	Theory	Practical	Age	Grade	Sex	Fin. 1	Fin. 2	Fin. 3	Fin. 4
Fin. 2	-.030	.198	.154	.138	.069	-.069	-.458	1.000	-.521	-.052
	.349	.004	.021	.035	.184	.183	.000	.999	.000	.247
Fin. 3	-.112	.004	-.065	.023	-.145	-.038	-.507	-.521	1.000	-.058
	.070	.477	.196	.382	.028	.307	.000	.000	.999	.225
Fin. 4	.038	.024	-.007	-.008	.040	.022	-.051	-.052	-.058	1.000
	.310	.374	.462	.459	.302	.385	.253	.247	.225	.999

Table 4.43

Results of Multiple Stepwise Regression for Dependent Variable:

Marvel Theory Marks

Descriptive Statistics in Table 4.42

Step Number	Variables Entered	Multiple R	Multiple R Change	Adjusted R Square	Adjusted R Square Change	Sig. F Change
1	Age	0.2717	0.2717	0.0685	0.0685	0.000
2	Average	0.3829	0.1112	0.1367	0.0682	0.000
3	Fin. 1	0.4331	0.0502	0.1734	0.0367	0.004

Table 4.44

Results of Multiple Stepwise Regression for Dependent Variable:

Marvel Practical Marks

Descriptive Statistics in Table 4.42

Step Number	Variables Entered	Multiple R	Multiple R Change	Adjusted R Square	Adjusted R Square Change	Sig. F Change
1	Age	0.2246	0.2246	0.0450	0.0450	0.003
2	Sex	0.2765	0.0519	0.0657	0.0207	0.029

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter will deal first with the questions posed initially. Data and results of analysis from the previous chapter will be utilized in an attempt to supply reasonable answers to these questions. Next, some conclusions drawn from the data but not anticipated originally will be examined. Following these are recommendations which follow from the conclusions, or which are seen as necessary in order to provide missing information.

A. Conclusions with regard to questions posed

1. What was the probability that a Marvel beautician graduate would become a registered apprentice?

With reference to Table 4.12, it is obvious that 1984 was a different year from the other three. This is explained by the fact that the Alberta Apprenticeship Branch "grandfathered" the people who had begun technical training prior to Alberta Regulation 422/83 (December) being proclaimed. Of the 153 Marvel graduates from 1984 who registered with the Apprenticeship Branch, only 14 actually apprenticed. The other 139 registered only to challenge the journeyman proficiency exams. It can also be seen that two of the 14 were still apprenticing in April of 1988, suggesting that these people did not enter apprenticeship immediately following graduation from Marvel. An examination of the column in Table 4.12 headed "in period 2 of apprenticeship"

reveals the following percentages of Marvel graduates for each year: 1984 - 1.2%, 1985 - 8.2%, 1986 - 12.3%, and 1987 46.6%. The fact that people who graduated from Marvel prior to 1987 were still registered as apprentices in April of 1988 indicates that not all graduates complete the 1400 hours of apprenticeship in the year following private vocational school graduation. It is also quite likely that some do not register with the Apprenticeship Branch immediately following graduation, but wait one, two, or more years. This would explain the declining percentages of Marvel graduates from each year registered with the Apprenticeship Branch (1984 - 88.4%, 1985 - 82.3%, 1986 - 76.4%, 1987 - 56.3%). It could also explain the declining percentages who had completed journeyman requirements from each year.

In 1985 the new regulations were in effect and only two Marvel graduates challenged the proficiency exam without apprenticing. Of the remaining 145 graduates, 104 had apprenticed and completed all requirements, 3 had withdrawn from apprenticeship, and 12 were still apprenticing as of April 1988. These data yield a probability of 0.81 that a Marvel graduate of 1985 would become a registered apprentice. Given that two people who graduated from Marvel in 1984 were currently apprenticing, it is possible that the numbers for the 1985 graduates may increase over time, raising the probability.

In any case, 1985 seems to be the best data to look at for probability that a Marvel graduate will become a registered apprentice, at some time in the future.

Another way of posing the question would be to ask "What is the probability that a Marvel graduate will become a registered apprentice by: (a) April following graduation, (b) one year later, (c) two years later?" The answers to these three questions can also be derived from Table 4.12, as follows:

		Probability
a)	April following graduation	0.553
b)	One year later	0.717
c)	Two years later	0.810

1984 data are excluded because of the change in regulation, which actually came into effect for the 1985 graduates.

It seems reasonable to conclude that, over time, a probability of 0.81 or greater exists that a Marvel graduate will become a registered apprentice. The increase from a probability of 0.55 can be interpreted to result from students waiting one or more years before becoming registered apprentices.

2. What percentage of Marvel graduates become certified beauticians?

Here again, there is a difference between 1984 graduates and those from succeeding years. Of the 136 Marvel graduates from 1984 who became certified beauticians prior to April of 1988, 124 did so by challenging the proficiency exams, and only 12 followed the route of apprenticing and then passing the second-year

exams. Figures are reversed for 1985 through 1987 graduates, with 10 percent or fewer of the certified journeymen achieving this status through challenge exams.

The percentage of Marvel graduates from each year who have become certified beauticians is shown in Table 4.12, under the heading "obtained journeyman certificate." Again, the percentage has declined in each succeeding year, from 78.6 percent in 1984 to 9.7 percent in 1987. However, if the persons currently in apprenticeship are added in, the percentages are increased as follows:

1984 - 79.8%

1985 - 79.6%

1986 - 74.5%

1987 - 56.3%

This requires two assumptions: (a) the persons currently apprenticing will complete their apprenticeship period, and (b) they will pass the second-year exams. These assumptions seem reasonable in the light of past experience. To date, only five Marvel graduates who were apprenticed have withdrawn or failed. Compared to the 179 who have apprenticed and completed all requirements, this would produce a withdrawal/failure rate of 2.8 percent. This withdrawal/failure rate applied to the persons from each year currently apprenticing would result in no reduction in 1984 through 1986 and a reduction of one in 1987 (rounded to the nearest whole person).

Percentages of Marvel graduates from each year who should become certified beauticians (after the failure/withdrawal rate is applied to current apprentices) are shown below:

1984 - 79.8%

1985 - 79.6%

1986 - 74.5%

1987 - 55.3%

Since graduates continue to apprentice for up to four years following graduation, the figures for 1984 and 1985 seem most indicative of the eventual certification rate. This would mean that approximately 80 percent of Marvel graduates will eventually become certified beauticians.

3. Do any student attributes at the time of entrance into the Marvel program correlate highly with either 1 or 2 above or with success in the Marvel program?

(a) Attributes correlated with becoming registered as an apprentice.

Of interest here are the crosstabulations and correlations involving "code" (having been an apprentice and completing all certification requirements) and "period" (being currently registered as an apprentice). Table 4.33 shows a significant relationship ($p<0.001$) to exist between method of financing and code. Percentages of students with each method of financing who had completed certification requirements through apprenticeship are shown below, in descending order:

Financing Methods	% Apprenticed & Completed
S.F.B. plus any other source	43.6
Self and/or relatives	26.7
Manpower and/or other government source	12.7
Just S.F.B.	12.1

A significant relationship ($p<0.001$) was also found to exist between method of financing and currently being apprenticed (Table 4.34). Percentages of students with each method of financing (descending order) who were currently apprenticed are given below:

Financing Methods	% Currently Apprenticing
Just S.F.B.	19.6
S.F.B. plus any other source	11.7
Self and/or relatives	7.4
Manpower and/or other government source	7.3

By combining these two tables (4.33 and 4.34), it can be seen that 55.3 percent of Marvel students financed by the Students' Finance Board in combination with another source have registered as apprentices. In contrast, only 20% of students financed by Canada Manpower and/or any other government source have registered as apprentices. Comparable percentages for financing by self and/or relatives and financing only by the Students' Finance Board are 31.1 and 32.3, respectively. In other words, the students financed by the Students' Finance Board and

another source (usually relatives or self), were much more likely to become registered as apprentices than those financed by any other method(s). Providing Students' Finance Board, Canada Manpower, or other types of government funding to prospective Marvel students who do not have any other source of funding seems to be a questionable practice in light of the low apprenticeship registration rates above.

There is also a significant ($p<0.03$) relationship between student sex and code, shown in Table 4.36. Female students had registered as apprentices and completed certification requirement at almost twice the rate for males (26.0%: 14.9%). The relationship between student sex and currently being an apprentice was not significant (females 12.9%: males 16.0%). Altogether, 38.9 percent of female students become registered apprentices, compared to 30.9 percent of male students. While this seems to indicate that being female is an advantage in becoming a registered apprentice, a chi-square analysis shows the differences to not be significant at the 0.05 level ($x^2=2.2683$, critical $x^2=3.841$).

Correlations of student attributes (age, grade level, high school average, Marvel theory mark, and Marvel practical mark) with code and period are shown in Table 4.28 (for all four years) and Tables 4.29-4.32 (separated by year). No correlation coefficients were found which exceeded a value of 0.285. Thus, while many of the correlations were significant beyond the 0.01 level (because of the rather large sample size), none were

sufficiently strong to indicate anything but a very weak relationship.

b) Attributes correlated with becoming a certified beautician.

Here, crosstabulations and correlations involving "exam" (having written and passed Apprenticeship Branch exams required for certification) are the considerations. The exams could be the second-year apprenticeship type, or the challenge proficiency exams, because either will satisfy certification requirements.

A significant relationship between method(s) of financing and having written and passed the exams was found (Table 4.35). Students financed by the Students' Finance board and another source had the highest pass rate (53.2%), closely followed by students financed by themselves and/or their relatives (51.5%). Students financed entirely by Canada Manpower and/or another government source had the lowest pass rate (25.5%). Those funded entirely by the Students' Finance Board had a pass rate of 32.0 percent, but contributed the most of any financing group (12.68) to the total chi-square of 35.78. Here again, it seems that providing Students' Finance Board, Canada Manpower, or other government funding to students who have no other source of financing does not result in a very satisfactory rate of writing and passing the exams required for certification as a beautician.

The attribute of student sex (shown in Table 4.38) did not result in a significant relationship with the exam pass rate after Yates' correction was applied. However, 43.9 percent of

female students wrote the exams and passed, compared to 33.0 percent of male students.

Correlations for other attributes (age, grade level, Marvel theory mark, Marvel practical mark, and high school average), shown in Table 4.28, showed only slight relationships. The over-all correlation coefficient for grade level and exam was approximately 0.22, but was significant ($p<0.001$). The correlations by year of completion/termination produced some slightly higher coefficients, with the largest being in 1985. For that year, significant relationships were found between Marvel theory mark ($r=0.315$), Marvel practical mark ($r=0.282$), and grade level ($r=0.274$) and exam. All were significant beyond the 0.001 level.

Generally speaking, no relationship was found between either student age or high school average and having written and passed the Apprenticeship Branch exams. Relationships between Marvel marks and writing and passing the exams fluctuated, in both strength and significance. The only relationship which was somewhat consistent was between grade level and the Apprenticeship Branch exams. This was significant ($p<0.01$) in all cases with a coefficient ranging between approximately 0.20 and 0.27. Thus, students who have completed grade 12 are somewhat more successful at completing all requirements for certification as beauticians.

c) Attributes correlated with success at Marvel.

Three distinct, though related, criteria can be examined

with regard to this topic. The first is completing (not terminating) the Marvel program. The other two are the marks received from Marvel in both theory and practical. Any student who terminated the training program will not have marks for theory or practical. Occasionally, a student has only a theory mark or only a practical mark, having not shown up to do the other one.

c.1) Termination rates at Marvel. A crosstabulation of method(s) of financing and termination of the Marvel training program (Table 4.23) shows significant relationships ($P<0.01$). The highest termination rate (45.8%) was for those funded by government sources other than Canada Manpower. The second highest termination rate (32.0%) was for students funded only by the Students' Finance Board. The lowest termination rates were for students financed by their relatives (12.6%), or by themselves and the Students' Finance Board (14.3%). These termination rates can be compared to the average termination rate for the whole sample of 25.6 percent. An examination of the remaining methods of financing shows four to be very close to the average termination rate, and one (those financing themselves) to be somewhat lower at 19.4 percent. Students funded entirely by the Students' Finance Board or by a government source (other than Canada Manpower) appear to be most at risk in terms of termination. Those whose relatives finance the training, or who use their own funds in combination with Students' Finance Board monies, are mostly likely to complete the program.

Student sex is also significantly related to termination (Table 4.24). A chi-square analysis, after Yates' correction, shows a value of 9.86, significant beyond the 0.01 level. Males were almost twice as likely as females to terminate, with rates of 39.4 percent compared to 23.7 percent.

Correlations of other student attributes and termination (Table 4.27) showed a weak but significant relationship between grade level and termination ($r=-0.2131$, $p<0.001$). The negative coefficient indicates that those with a higher grade level were less likely to terminate their Marvel training.

Putting all of these relationships together, it can be argued that the lowest termination rates would apply to females with grade 12 who were funded by relatives or by themselves in combination with the Students' Finance Board. Conversely, males with grade 10 or less who were funded entirely by government sources other than Canada Manpower, or by the Students' Finance Board, would have the highest termination rates.

c.2) Theory marks at Marvel.

A relationship, significant beyond the 0.05 level, was found between type of financing and theory mark received (Table 4.21). Students with a combination of Students' Finance Board and Canada Manpower funding had the highest failure rate (13.3%). This was over twice the whole group failure rate of 6.1 percent. Next highest, in rate of failure, were those financed by a combination of their own funds and Students' Finance Board funds (9.3%). At

the other extreme, students financed only by their own funds had a failure rate of only 1.8 percent.

High theory marks were received by students financed by themselves or by themselves and their relatives:

Financing	Percent of students receiving marks	
	80% and above	85% and above
Self	56.2	28.1
Self & relatives	47.6	28.6
S.F.B. & relatives	28.3	7.6
Relatives	26.4	6.9
Group averages	41	17.1

Low theory marks were received by those who were financed by a combination of the Students' Finance Board and their relatives' funds, or entirely by their relatives.

A general conclusion here is that students' funded entirely by themselves are significantly more likely to achieve high theory marks and significantly less likely to fail. Funding entirely by relatives, or in combination with Students' Finance Board funds, is not related to a high failure rate, but is related to lower theory marks.

The relationship between student sex and theory marks was not significant in the chi-square analysis.

The multiple stepwise regression of attributes and theory marks found grade level and age to be significant predictors (Tables 4.39, 4.40) for the whole group. However, only 8.2

percent of the variance in theory marks was accounted for by these two variables. When the variable "average" was included in the multiple regression, the number of cases was reduced to 175 (Tables 4.42, 4.43). However, the two variables of age and average were able to explain 13.7 percent of the theory mark variance.

Moderate correlations were found between some of the high school science courses and Marvel theory marks (Table 4.20), the largest coefficients being for chemistry 30, biology 20, and biology 30. These range from 0.486 to 0.565.

Taken together, the above data suggest that prospective students who submit transcripts showing that they have completed grade 12 with good marks (particularly in the sciences) are most likely to do well in Marvel theory. Having completed grade 12 will also mean that they may have an age advantage over those with less education.

c.3) Practical marks at Marvel.

Practical marks at Marvel were also significantly related to method(s) of financing, as shown in Table 4.22. Nine percent of those financed entirely by their relatives and 8.8 percent of those financed by their relatives in combination with the Students' Finance Board failed. Only 1.8 percent of those financing themselves and 2.3 percent of those using their money in combination with Students' Finance Board funds failed. The average failure rate for the whole sample was 5.7 percent.

Practical marks did not have as broad a range as theory marks, but significant differences also existed at the top of the range. Marks of 80 percent or higher were received by 28.1 percent of those financing themselves. Only 3.3 percent of those financed by relatives in combination with the Students' Finance Board and 4.8 percent of those financed by themselves in combination with their relatives received marks of 80 percent or above.

Differences between sexes, with regard to pratical marks, were not significant when subjected to chi-square analysis.

No correlation coefficients of even moderate strength were found between Marvel practical marks and high school subject marks (Table 4.20). The highest coefficient found was between age and practical mark ($r=0.234$, $p<0.001$).

Multiple regression results (Tables 4.39, 4.41) indicate that the best predictors of practical marks were age, whether Students' Finance Board funding in combination with any other source was used, sex, and grade level. Altogether, these four variables only explained 8.1 percent of the variance in practical marks, with 5.7 percent coming from age alone. Being funded by the Students' Finance Board plus some other source was negatively correlated to practical marks. The sex relationship indicates that females did slightly better in their practical marks. The multiple regression which included the variable of high school average did not show this to be a predictor of practical marks.

To summarize, none of the attributes/variables were very useful predictors of practical marks. However, older students who are using at least some of their own money and not obtaining any funds from relatives would seem to have an advantage.

4. How do certification success rates of Marvel graduates compare to those of Alberta beautician apprentices in general?

Only annual statistics for the whole beautician trade in Alberta were available. These were used to make comparisons with students who graduated from Marvel. From Table 4.18 it is clear that no second year apprenticeship exams for beauticians were conducted in 1984. Nor was any beautician technical training conducted by the Apprenticeship Branch that year (Table 4.17). The 1067 persons who received journeyman beautician certificates in 1984 would have all passed the proficiency (challenge) exams, even though three graduates from apprenticeship are shown in Table 4.17. This serves to reinforce the idea that 1984 was a different year from the other three, and that perhaps data from that year should be treated separately in this case.

In 1984, 1556 prospective beauticians wrote the proficiency exams. Only 1067 journeyman certificates were issued. This translates to a pass rate of 68.6 percent for the Province in general. Table 4.19 shows that 151 persons who graduated from Marvel in 1984 attempted the exams required for certification. Of these, 136 were successful at becoming certified, for a pass rate of 90.1 percent. Although these two pass rates are not directly comparable, because the data for Marvel graduates is

cumulative, while the data for all of Alberta is not; there is a strong indication that Marvel graduates who attempted the exams did better than the Provincial average in terms of rate of passing.

Looking at the data for 1985 through 1987 in Tables 4.18 and 4.19, it is evident that Marvel graduates also exceeded the Provincial pass rate in each of these years. The average Provincial pass rate (weighted) for those three years was 86.1 percent, while the weighted pass rate for Marvel graduates was 99.4 percent.

From Table 4.17 (technical training columns), it is apparent that the number of "true apprentices" in the Alberta beautician program is relatively small. Any person apprenticing without previous vocational/technical training as a beautician would be required to take first year technical training. Since only about 35 persons per year have been taking first year technical training, it seems reasonable to conclude that this approximates the number of "true apprentices" per year. Thus, most persons who do the second year apprenticeship exams, or the proficiency exams each year are in a similar category to the Marvel graduates. They have had vocational/technical training prior to apprenticing as beauticians.

It seems fair to conclude that, for the years studied, Marvel graduates have been doing very well. They have exceeded the Provincial pass rate for the certification exams in each of the four years. For the last three years, the Marvel graduates

pass rate has exceeded 99 percent, compared to a total Provincial pass rate of about 86 percent (weighted average). Limitations of the data prevent more definite conclusions, but it seems apparent that graduating from the Marvel beautician program is an advantage with regard to becoming a certified journeyman beautician.

B. Other Conclusions from the Data

Some interesting trends, not foreseen originally or posed as questions, have emerged from the data. These will be dealt with separately below.

1. Failure at or withdrawal from Marvel does not necessarily mean that one will not become a certified beautician. From Tables 4.15 and 4.16, we find that 22 of the Marvel withdrawals/failures are currently apprenticing, six in year one and 16 in year two. Also, 21 withdrawals/failures have obtained journeyman certificates (1984 through 1987). Thus, 8.5 percent of the total withdrawals/failures are certified beauticians and a further 8.9 percent are currently apprenticing. Similar logic to that used in sections A, 1 and A, 2 would lead to the conclusion that about 20 percent of those who fail at or withdraw from Marvel will eventually become certified beauticians. This is approximately one fourth the rate of those who graduate from Marvel.

2. There is a significant trend toward a higher failure/withdrawal rate at Marvel. The following percentages, obtained from Table 4.7, demonstrate this trend:

Year	Combined Failures and Withdrawals as a Percentage of Entrants
1984	19.5
1985	34.1
1986	37.3
1987	39.4

A chi-square analysis found the relationship between year and failures/withdrawals to be significant ($p<0.001$). A large difference is apparent between 1984 and the most recent three years.

This trend has resulted in a significantly smaller percentage of entrants graduating from Marvel in each of the last three years than did in 1984. In fact, the percentage who graduate has dropped by approximately 25 percent, from 80.5 percent of entrants in 1984 to 60.6 percent of entrants in 1987. While the largest drop was between 1984 and 1985, there is no indication of a reversal of this trend.

3. The change in the Beautician Trade Regulation (Alberta Regulation 422/83) allowing persons who follow the "true apprenticeship" route to complete their training in about the same length of time as those who take a 1400 hour technical training program has not resulted in large numbers of "true apprentices." In 1985 (the first year that it was available) 42 persons took first year beautician training. The numbers declined to 29 in 1986 and 36 in 1987 (Table 4.17). This represents only 3.4 percent of the total registered apprentices

for the last two years. By comparison, if all registered apprentices had been "true apprentices," in a two year apprenticeship program one would expect approximately 50 percent to take first year technical training each year.

The number of people taking second year technical training has been increasing each year, but not as a result of any increase in "true apprentices." The increase has resulted from persons with previous vocational/technical training failing their certification exams and being required to take the second year technical training before rewriting the exams.

Thus, it seems the main effect of the change in regulations has been to lengthen the training period for 1400 hour beautician program graudates by adding a further 1400 hours of practical experience (apprenticeship). Eligibility to write the journeyman certification exams has also been postponed for a year (all apprenticeship hours must be completed first), probably accounting for the reduction in journeyman beautician certificates issued in 1985.

C. Recommendations

The following recommendations are a logical result of the data analysis and conclusions presented earlier. Many questions concerning beautician training in Alberta remain to be answered and it is hoped that these recommendations may be helpful in providing answers. Additionally, some may be helpful to Marvel and/or to the Alberta Apprenticeship Branch.

1. The student attributes available from Marvel files were not found to be sufficiently strong predictors of student success (either at Marvel or at becoming certified beauticians) or to be very useful in screening prospective entrants. One reason for this could be that high school marks were available for less than a third of the sample studied. Also, entrants were not a reliable source when indicating their highest grade level completed. Further, the Apprenticeship Branch regulations require persons commencing apprenticeship as a beautician to have grade 10 or to pass an entrance exam. However, no standardized definition could be found of what constitutes grade 10 or an entrance exam. The following recommendations stem from these concerns:

a) Students applying to Marvel (or any other beautician training program) should be required to provide high school transcripts as part of the application procedure.

b) A standard definition of what constitutes grade 10 should be established by the Provincial Apprenticeship Committee for the Beautician Trade.

c) The same Provincial Apprenticeship Committee should adopt a standard entrance exam to be used whenever an entrant cannot supply acceptable evidence of having completed grade 10. For example, the Canadian Achievement Test or other Standardized test of academic preparation.

d) For purposes of uniformity, b and c above should apply universally to any beautician training program or apprenticeship candidate within Alberta.

2. Should the Marvel representatives desire to lower their failure/withdrawal rate and improve the rate of student success at Marvel, the findings from this study indicate that this could be best done by selecting students who:

a) have completed grade 12 with a good average;

b) have taken and done well in high school science courses (particularly biology 20 and 30 and chemistry 30); and

c) are supplying at least a portion of the required funding themselves.

Student age and sex attributes could also be useful, but may violate the Canadian Bill of Rights.

3. If the Students' Finance Board desires to limit the number of applicants who borrow money and then fail to complete the training program or fail to pursue a career as a beautician, they should cease being the sole source of funding for entrants.

D. Suggestions for Further Research

The findings of this study suggest that there is a need for more research in this area. Given the number of students involved in training through both apprenticeship and private vocational schools in Alberta, it is surprising how little research has been done concerning any of the programs. Some possible topics of investigation are itemized below.

1) What are the success rates of students training as beauticians in other private vocational schools?
2) What probabilities of becoming an apprentice and becoming a certified beautician are associated with graduates of other beautician training programs in Alberta?
3) Why are more beautician candidates not utilizing the "true apprenticeship" route instead of taking a 1400 hour technical training program?
4) What type of entrance exam can be used to increase the accuracy of predictions concerning success as a beautician trainee?
5) Are any measurable personality traits highly correlated with success as a beautician trainee and useful as predictors?
6) Are there interest or aptitude factors which are related to success at becoming a beautician and which could be used for screening and advising?
7) Why do many graduates of 1400 hour beautician training programs wait one, two, or more years before entering apprenticeship to complete their certification requirements?
8) How many new certified beauticians are required in Alberta each year to replace those who leave the occupation and to meet any demand for increased service?

Answers to these questions would be of considerable assistance to anyone contemplating a career as a beautician. They would also assist counsellors trying to advise prospective beautician trainees.

Bibliography

Alberta Advanced Education (1988). 1986-87 Annual Report. Edmonton: Author.

Alberta Advanced Education and Manpower (1979). Occupational profiles. Edmonton: Author.

Alberta Advanced Education (1975). The third annual report 1973-74. Edmonton: Author.

Alberta Manpower (1986). The apprenticeship and trade certification program. Edmonton: Author.

Alberta Manpower (1986b). Post-secondary graduate employment follow-up survey. (Vol. I & II). Edmonton: Author.

Alberta Manpower, Apprenticeship and Trade Certification Branch (1985-1988). Executive director's report and annual statistical review of apprenticeship and trade certification programs for 1984-1988. Edmonton: Author.

Alberta Manpower, Planning Secretariat (1985). A comparative analysis of apprenticeship systems locally, nationally, and internationally. Edmonton: Author.

Bernier, J. (1971). Apprenticeship in Quebec: Factors determining enrolment and drop-out. Unpublished report for the Department of Manpower, Government of Canada, and Provincial Apprenticeship Board.

Campbell, D. L. (1972). The 1970 survey of Alberta manpower development. A study for the Department of Advanced Education and Department of Labour, Edmonton.

Department of Labour-Canada (1957). A modern concept of apprenticeship: The story of apprenticeship in Alberta. Ottawa: Vocational Training Branch.

Employment and Immigration Canada (1987). The Canadian jobs strategy: Working opportunities for people. Ottawa: Author.

Employment and Immigration Canada (1987b). Job futures: An occupational outlook to 1995, 1988-89 Edition, Ottawa: Canadian Government Publishing Centre.

Employment and Immigration Canada (1982). Careers Alberta 1982, Vol. III, Ottawa: Canadian Employment and Immigration Commission.

Employment and Immigration, Canada (1981). Survey on entry into apprenticeship training: A summary guide to the findings. (Prepared for the Interprovincial Standards Program Coordinating Committee). Ottawa: Author.

Florida State Advisory Council on Vocational and Technical Education (1976). Measures of success: A survey of selected vocational and technical education programs in Florida which train students in occupations requiring licenses. (ERIC Document No. ED 132 260).

Ginzberg, Eli (1977). Apprenticeship and manpower policy. In The future of apprenticeship. Report of the symposium, Focus on Apprenticeship. Ontario Ministry of Colleges and Universities.

Guidance Centre, University of Toronto (1985). G. C. Occupational Information: Hairdresser. Toronto: Author.

Muir, J. D. (1971). Impact of specialization upon apprenticeship as a method of training. Unpublished report for the Department of Manpower and Immigration, Government of Canada, and the Apprenticeship Branch, Department of Labour, Province of Alberta.

Nielsen, H. K. (1973). A follow-up study of vocational high school students on apprenticeship programs. Unpublished master's thesis. University of Alberta, Edmonton.

Northern Alberta Institute of Technology (1984-1987). Placement fact sheets (1983-86). Edmonton: Author.

Parrott, H. (1977). The apprenticeship renaissance. In The future of apprenticeship. Report of the symposium, Focus on Apprenticeship. Ontario Ministry of Colleges and Universities.

Pipes, V. D. (1981). Evaluation of the Cosmetology Program at Caldwell Community College and Technical Institute. Caldwell Community College and Technical Institute, Lenoir, NC (ERIC Document No. ED 224 527).

Province of Alberta (1987). Private Vocational Schools Regulation. Alberta Regulation 110/80 with amendments to 145/87. Edmonton: Queen's Printer.

Province of Alberta (1987). Manpower Development Act General Regulations. Alberta Regulation 43/77 with amendments to Alberta Regulation 424/87. Edmonton: Queen's Printer.

Province of Alberta (1986). Manpower Development Act (1976), R.S.A. 1980, ch. M-3, with amendments to Sept. 12, 1986. Edmonton: Queen's Printer.

Province of Alberta (1983). Manpower Development Act Beautician Trade Regulation. Alberta Regulation 422/83, Edmonton: Queen's Printer.

Province of Alberta (1980). Private Vocational Schools Act (1979), R.S.A. 1980, ch. P-19, Edmonton: Queen's Printer.

Pucel, David (1980). Review and synthesis of criteria useful for the selection and admission of vocational students. Columbus: National Center for Research in Vocational Education.

Ramsay, E. A. (1974). Apprenticeship discontinuance in three trade areas in the Province of Alberta. Unpublished master's thesis. University of Alberta. Edmonton.

Smith, Art (1981). Generic skills: Improving job transferability in occupational training. A Labour Market Development Task Force Report for Canada Employment and Immigration Commission, Ottawa.

Standing Senate Committee on Social Affairs, Science and Technology (1987). In training, only work works. The Report of the Sub-Committee on Training and Employment. Ottawa: Queen's Printer.

Watson, T. (1986). Apprenticeship - Time-served or time-serving? Canadian Vocational Journal. 22(1), 3-5.

Watson, T. (1983). Interprovincial standards program: A model of flexibility and cooperation. Background paper prepared for the Skill Development Leave Task Force. Employment and Immigration Canada.

Weiermair, K. (1984). Apprenticeship training in Canada: A theoretical and empirical analysis. Discussion paper No. 250 prepared for the Economic Council of Canada, Ottawa.